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BERKELEY LINGUISTICS SOCIETY

Proceedings of the Thirteenth Annual Meeting

February 14-16, 1987

GENERAL SESSION

AND

PARASESSION

ON

GRAMMAR AND COGNITION

Berkeley Linguistics Society
Berkeley, California, USA

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GENERAL SESSION

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GRAMMAR AND COGNITION

edited by

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(c) 1987 by Ray Jackendoff

"Tone and Accent, and Getting the Two Together"
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POTEET, STEPHEN
Paths Through Different Domains:
A Cognitive Grammar Analysis of Mandarin 'Dao'

VIJAYAKRISHNAN, K.G.
Hierarchical Representation of Phonological Features

Preface

Though not a superstitious lot, we were concerned that the Thirteenth Annual Meeting might be plagued by misfortune. We are happy to report that we enjoyed the best of luck; conference attendance reached a new high, and blue skies and balmy breezes replaced the rain which had become traditional. We were also blessed with the help and encouragement of a number of extraordinary people, without whose efforts the conference would not have been possible. We therefore give our heartfelt thanks to:

Gene Buckley, tireless mailing party participant and conference troubleshooter; Claudia Brugman, Michele Emanatian, and Monica Macaulay, "big sisters" and caterers *par excellence;* Dead Tongues (Ivan Sag, Peter Sells, Kathryn Henniss, et al.), who made the BLS Valentine's Day party memorably danceable; the Institute of Cognitive Studies for continuing to give us shelter; veteran BLS officer Kiki Nikiforidou for guidance; Chuck Fillmore for support and assistance; and all of the friends and former friends who waded through hundreds of abstracts, staffed the registration and book tables at the conference, served as session chairs, or attended our marathon mailing parties.

We would also like to thank all those who presented papers or submitted abstracts—the numerous contributions to this year's parasession on Grammar and Cognition testify to a strong interest in the topic at Berkeley and beyond. We believe the papers from the general session and parasession to be of enduring quality, and trust that **BLS 13** will be as enjoyable to read as it was to produce.

Laura Michaelis
Hana Filip
Natasha Beery
Jon Aske

1986-87 BLS Officers

GENERAL SESSION

THE ACCUSATIVITY/ERGATIVITY BALANCE IN A NON-SPLIT ERGATIVE LANGUAGE
The Case of Euskara (aka Basque)* †

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The algorithmic or computer metaphor
has gone as far as it can in linguistics,
and it hasn't gone very far.
Anonymous

il ez da eta ez da ilko guk ez badugu nai,
bizi irritaz zegoen gure maitasun zai
Lizardi

Dedicated to the martyrs of *Gernika,*
On the 50th anniversary of the massacre.

1. The aim of this paper is to provide an understanding of the diachronic and synchronic forces behind the 'personality' of the ergative system of Basque. Basque has a ***fully*** **morphologically ergative** system but is, at least to a great extent, **syntactically accusative** (cf. Anderson 1976)[1]. We know that this pattern of morphological ergativity without syntactic ergativity is the norm in most ergative languages. Unfortunately, this has led many to think that ergative (**E:** S_t) and absolutive (**A:** S_i and **O**) are not important or 'relevant' categories in language. In addition, a great number of ergative languages are not fully ergative, but only partially ergative, or **split ergative**[2]. Added to these facts is the statistical and diachronic evidence that an accusative state of affairs is more stable than an ergative state of affairs. All this has reinforced the belief that ergative morphology is the leftover of the diachronic processes which give rise to ergative systems, and nothing else. This is true to a degree, but the reality is much more complex. In truth the systemic forces for ergativity and for accusativity are constantly at play in all languages. I will try to show that ergative-absolutive morphology is quite meaningful in Basque. Basque is a **non-split** ergative language in which the categories ergative (E) and absolutive (A) are motivated by the semantic categories patient and agent. However, in order to maintain a formally tidy system the semantic motivation of these categories has been weakened to a considerable extent.

2. RELATIONS INSIDE THE CLAUSE. At the heart of understanding grammar is the problem of the relationship between **semantic** (thematic, role) **relations,** like agent and patient, **discourse-pragmatic relations,** like topic and focus, and **grammatical(ized) relations,** like subject, object, ergative, and absolutive. I will adopt a view in which the pragmatic and the semantic forces coexist at the same level of representation, for each clause in context, but which are somehow subject to the grammaticized requirements of the lexical representations and the grammatical constructions of the language. In other words, this view places "emphasis on the logical independence of semantic and discourse factors together with their cross-linguistic tendency to be coded together in grammatical relations" (Nichols & Woodbury 1985:3).

For example, a major pragmatic relation, variously known as *topic, theme,* or *pragmatic peak* (cf. Foley & Van Valin 1984), which is behind the clause level

theme-rheme, or *topic-comment* split, is in some languages (so-called configurational, in fashionable terminology) grammaticized (perhaps to different 'degrees') into the subject-predicate (NP-VP) construction[3]. In spite of this grammaticalization into 'default' grammatical relations and constructions, the semantic and pragmatic motivating forces continue to exist in the background and typically there exist grammaticalized lexical and syntactic ways of overriding the default relations (e.g. the *passive* and *topicalization* constructions).

The two major pragmatic relations I take to be **topic** (theme, pragmatic peak) and **focus** (new information, contrast, etc.). And the two major semantic relations, **agent** and **patient,** defined in a loose way since these categories have cognitively relevant prototypes but subsume a wide range of cases[4]. This doesn't mean that every sentence has to have a topic or focus phrase, nor does it have to have an agent or a patient, but again, these are cognitively and linguistically relevant categories which motivate grammaticalization patterns, as we will see below. These pragmatic and semantic forces are in a sense 'competing', in DuBois' (1985) sense, for the morphological, categorial marking of relations in all languages[5].

3. HOW DO LANGUAGES BECOME ERGATIVE? In order to understand ergativity we must understand the diachronic ways in which languages become ergative. Basically the first step consists of turning what in an accusative language is the direct object into the subject and pragmatic peak of the clause in a large and consistent number of cases. This can happen for instance when a *passive construction* becomes the preferred structure in sentences where the object is more *topic-worthy* than the subject[6]. The result is that the old 'subject' becomes an obliquely marked NP. Another instance in which objects become subjects and subjects obliques is when an *oblique possessive construction* becomes generalized for uses other than to indicate possession, as for instance to indicate perfective aspect (cf. Anderson 1977:340).

The characteristic of these ergative-absolutive (E-A) constructions is that they are **patient centered.** Initially only a minority of objects qualify for this construction and the selection has to do with high affectedness, saliency, high referentiality, etc. of the patient, all characteristics which have been identified elsewhere with 'good' patienthood and high transitivity (cf. Hopper & Thompson 1980). Things may remain like this and we will have a split ergative system, and very likely the system will find an objective means of deciding in which cases the ergative-absolutive construction is used and in which ones the subject-object construction is used[7]. One typical solution is to put the new construction to a specific use related to some aspect of high transitivity and patient affectedness, the most common use being to indicate perfective aspect or past tense (for examples see Anderson 1977).

The specialization of the E-A construction, especially if its use is extended to patients that are are not very 'deserving' topic, creates a problem with the reference-pragmatic forces. Since the obliquely marked NP (the ergative NP) will in many cases be even more topic-worthy than the unmarked NP (the absolutive NP), it will have more in common with the subject of intransitive predicates (absolutive constructions) (the default topic there) than the absolutive of transitive predicates (ergative-absolutive constructions).

What sort of **solutions** do languages give to this 'problem', or state of affairs? Commonly a language keeps the ergative-absolutive construction for a special purpose but turns the obliquely marked NP into the default grammaticized pragmatic peak (i.e. the **pivot** or 'subject'). This means that ergative morphology is kept but accusative syntax prevails. Languages where the semantic motivation for the E-A construction is not totally lost have ways of demoting objects which are not worthy

of pivot status, the best known case being the *antipassive construction,* by means of which the ergative marked NP receives the unmarked absolutive case and the unworthy patient is either turned into an oblique argument or incorporated into the verb. The few syntactically ergative languages (if there are any besides the well-known Dyirbal, cf. Dixon 1979) may be languages in which the mentioned reanalysis has not occurred and in which the absolutive is still the default topic, although there are topicality (themacity) related restrictions as to what can and cannot be marked absolutive.

4. THE FORCES FOR ACCUSATIVITY AND ERGATIVITY. What we have just seen is only half of the story. How we get from here to a fully ergative system, like the one in Basque, is the other half. I claimed above that subject is the grammaticized version of the pragmatic category topic. That explains why the cross-linguistic characteristics of subjects found by Keenan (1976) are pragmatic, topicality-related ones. Even in languages that have a syntactic category subject, prototypical examples of the category are topical NPs. English happens to have stretched the boundaries of the category to allow for instance NPs with an indefinite referent (i.e. poor topics) to be subjects, but still, these cases are uncommon statistically (cf. e.g. Givón 1979:26-8), and in some cases they are even blocked (e.g. subjects of *tough* predicates cannot be indefinite, although they can be generic). Coincidentally, the arguments that have been put forth against the syntactic ergativity of languages like Basque are all based on phenomena where topicality is the relevant grammatical force (e.g. *control* or *Equi-NP deletion,* and *imperative deletion),* and, not surprisingly, languages that have specialized the E-A construction (i.e. all except for Dyirbal and perhaps other languages in transition) fail the test, for neither the category *ergative,* nor the category *absolutive* reflect the pragmatic force of topicality[8].

I have claimed that grammaticized topicality is what is shared by subjects (S_i and S_t). The question now is: what is shared by intransitive subjects (S_i) and direct objects (O), that makes absolutive (A) a valid grammatical category, especially in a fully ergative language, like Basque, without splits, and without even an antipassive construction? Keenan (1984) has argued that there is a great degree of semantic similarity and shared properties which "are broadly characterized in terms of bondedness to the verb, thematic role, and control phenomena" (1984:197). My feeling is that there is a grain of truth to this, but that Keenan exaggerates the similarity between the class of objects and the class of intransitive subjects. The class of objects can be argued to be rather coherent semantically. The class of intransitive subjects, however, is much more varied, with a subclass being closely related semantically to the class of objects (cf. Perlmutter's 1978 'unaccusative', or *patientive,* predicates), and another major subclass being closer semantically to the class of transitive subjects (cf. 'unergative', or *agentive* predicates). This means that the *semantic motivation* is split for accusativity and ergativity. As for the *pragmatic motivation* we already saw that the grammatical category subject is built upon the pragmatic category topic. The import of the other major pragmatic category, namely focus, is perhaps harder to determine, but in preliminary studies of Sacapultec, DuBois (1985) has found that the category absolutive is very highly correlated statistically in discourse with new information, and therefore with what could be called 'focusality'.

Without denying the importance of the relationship between the pragmatic category focus and the category absolutive, I would like to argue that at least in Basque the grammatical category absolutive is centered around the semantic category patient. The connection, however, could be said to be a tenuous one. Just

as **English** has 'stretched' the category **subject** to allow non-topical cases, and to be superseded by, or coexist with, topics produced by e.g. Topicalization, **Basque** has stretched the boundaries of the category **absolutive** to include rather poor examples of the category patient. The weakening of the semantic motivation has been in the interest of creating a tidy and symmetrical formal system. As for the category ergative, it has a semantic core which is the semantic categories agent and cause. In other words, Basque is very much a **role-dominated** language in the sense of Foley & Van Valin 1984 (cf. e.g. Brettschneider 1981:230-2).

5. SOME PRECONDITIONS FOR THE ERGATIVITY OF BASQUE.

Before turning to some of the reasons for my claim that the category absolutive in Basque is the grammaticization of the semantic category patient, I would like to consider two major preconditions for the stability and fullness of this ergative system (cf. Txillardegi 1978, Trask 1981, and Brettschneider 1984).

First of all, Basque is a non-configurational language (no VP constituent) which uses word (constituent) order in the clause to mark pragmatic relations (cf. De Rijk 1972, Mitxelena 1981), namely **topic** *(mintzagaia* in Basque), **focus** *(galdegaia* in Basque), and **given.** Schematically, the pragmatic main-clause constituent order is the following:

(1) **a.** [$_S$ **TOPIC ...**]
b. [$_S$ **.... FOCUS Verb ...**]
c. [$_S$ **.... Verb GIVEN/OLD/HEAVY**]

Degrees of topicality and 'focusality' are reflected, for instance, by the degree to which there is a pause following the topic or preceding the focus. Any phrase (not just major arguments) may be topicalized or focused, but neither category is obligatory in any one sentence. Also, question words, as well as answers to these questions, are always in focus position, with or without a phrase in topic position as well. Having such a fluid way of marking the pragmatic peak allows the case marking system to reflect the semantic relationships at the basis of the ergative and absolutive relationships[9]. This ordering and relations apply mainly in main clauses. Topic-Fronting and Focus-Positioning (cf. De Rijk 1978) are unbounded operations, i.e. bounded only by Ross-type constraints. Non-main clauses tend to be more often verb-final since in them the verb serves a delimitative function.

Another important feature of Basque is that the verb codes, or shows **agreement** for three participants: the ergative (E), the absolutive (A), and the dative (D). Not surprisingly then, Basque is a **three-way pro-drop** language. Also, the Basque **conjugation** is mostly periphrastic, with only a handful of verbs, which includes the auxiliaries, having some additional simple forms inflected for tense and nominal agreement. The periphrastic forms consist of one of the verb's non-finite forms, plus an auxiliary, either an intransitive auxiliary (derived from the verb for *be)* or a transitive one (derived from the verb for *have).* The dative argument can always be added 'for free' as an optional benefactive, except in the cases when it is an obligatory argument of the verb (a 'true' dative). There are five non-finite forms of verbs (of which the perfective participle is the citation form)[10]. The morphological configuration of most of the inflected forms is **A-root-(D)-(E)**[11]. That is, in every inflected form there are coreferenced on the verb: (a) always an absolutive participant, (b) an ergative participant only when such a participant is called for by the valence of the verb, and (c) a dative participant occasionally as an obligatory part of the valence, but otherwise as an optional argument, with a benefactive sense.

Here are three random versions of one sentence exemplifying word order varieties:

(2) **(a) Jon-ek Miren-i liburu-a ekarr-i dio (neutral order)**
Jon-E Miren-D book-A-DEF bring-PERF A3s-AUX(present)-D3s-E3s
Jon has brought a/the book to Miren

(b) Miren-i, Jon-ek ekarr-i dio liburu-a
Miren-D (Top) Jon-E (Foc) bring A3s-AUX-D3s-E3s book-A-DEF (Giv)
To Miren, it is Jon who has brought her a/the book

(c) Miren-i ekarr-i dio Jon-ek liburu-a
Miren-D (Foc) bring-PERF A3s-AUX-D3s-E3s Jon-E book-A-DEF
It is to Miren that John has brought a/the book

The following two sentences exemplify the addition of a dative as a *benefactive* participant to any sentence that doesn't already have a 'regular' dative:

(3) **(a) Txakurr-a hil da**
dog-A-DEF die-PERF A3s-AUX
The dog has died

(b) (Ni-ri) txakurr-a hil zait ("benefactive" D)
I-D dog-A-DEF die-PERF A3s-AUX-D1s
The dog has died 'on' me

6. THE BASIS OF ERGATIVITY IN BASQUE. The E-A construction has commonly been associated with transitivity and with different aspects of high transitivity, e.g. perfectivity of the action, total affectedness of the object, agent/cause acting on an object, etc. (cf. Hopper & Thompson 1980). There are several central types of two-place predicates which prototypically fit the E-A construction, namely (using Lyons' 1977:491 terminology) **operative** predicates: AFFECT(AGENT, PATIENT), **factitive** predicates: PRODUCE(CAUSE, EFFECT), and **operative-factitive** predicates: PRODUCE(AGENT, EFFECT). These are central transitive predicates which give us the prototypical members of the category *ergative,* i.e. agent and cause, and of the category *absolutive,* i.e. patient and effect, or affected patient and effected patient. Other types of predicates which are made to fit the E-A construction in Basque bring new extensions to the categories ergative and absolutive which are overwhelmingly motivated , that is, non-predictable but 'explainable' extensions, of the central cases (cf. Lakoff's 1987 *radial categories).*

The formal tidiness of the E-A construction in Basque can be seen clearly in two major types of 'valence' alternations with patient-centered predicates: (a) the **anticausative (optional-agent) alternation,** (called the patient-subject construction by van Oosten 1984) and (b) the **indefinite-agent alternation.** These alternations, common to most languages, are associated in accusative languages with transitive and intransitive uses of certain classes of predicates, the *break* class *(I broke the glass,* vs. *the glass broke),* and the *cut* class *(I cut the cake* vs. *cake cuts easily).* In both cases there is an obligatory patient, and a deletable agent. The difference is that in the intransitive version of predicates of the *cut* class an agent is implied, whereas no agent or cause is implied in the intransitive version of predicates of the *break* class.

In Basque, as in English, there is no special morphology to mark these alternations[12]. But unlike English, Basque has no structural or relational changes in the sentence other than the addition or subtraction of a participant and its accompanying coreferencing on the verb. Furthermore there are no restrictions on the application of either of these 'rules' or 'valence-changing' operations[13]. The following pair is an example of the **anticausative alternation:**

(4) **(a) Edalontzi-a apurtu da**
glass-A-DEF break-PERF A3s-AUX
The glass has broken

(b) Jon-ek edalontzi-a apurtu du
Jon-E glass-A-DEF break-PERF A3s-AUX-E3s
Jon has broken the glass

The next two, are an example of the **indefinite agent alternation**[14]:

(5) **(a) Jon-ek ogi-a moz-tu du**
Jon-E bread-A-DEF cut-PERF A3s-AUX-E3s
Jon has cut the bread

(b) Ogi-a moz-tu da
bread-A-DEF cut-PERF A3s-AUX
The bread has been cut; someone has cut the bread

Both of these predicate classes involve a patient and agent/cause, coded as absolutive and ergative participants, respectively, the former being indispensable and the latter dispensable.

In addition Basque also has a **synthetic causative** alternation formed by means of the verb-turned-suffix *erazi,* "to cause/make". Also here, the 'operation' consists of adding an ergative participant, the 'cause', to the 'basic' sentence. If there is an ergative in this basic, non-causative sentence, it gets 'demoted' to dative, while the absolutive NP, the patient, always keeps its case, as it is the center of the clause. The following pair shows an 'intransitive' sentence and a causative expansion of it:

(6) **(a) Miren dend-eta-ra joan da**
Miren-A store-PL-DIRECT go-PERF A3s-AUX
Miren has gone shopping

(b) Jon-ek Miren dend-eta-ra joan-erazi du
Jon-E Miren-A store-PL-DIRECT gone-cause-PERF A3s-AUX-E3s
Jon has made Miren go shopping

And the the next pair shows what happens to an ergative NP in a causative expansion:

(7) **(a) Miren-ek jan du ogi-a**
Miren-E eat-PERF A3s-AUX-E3s bread-A-DEF
Miren has eaten the bread

(b) Jon-ek Miren-i jan-erazi dio ogi-a
Jon-E Miren-D eat-cause-PERF A3s-AUX-D3s-E3s bread-A-DEF
Jon has made Miren eat the bread

Finally I will give one more example of a similar productive alternation. It involves verbs derived from directional phrases, tha is **directional verbs,** which involves a valence alternation, depending on whether 'self-movement' or 'other-movement' is involved, e.g.

(8) **(a) Jon etxe-ra-tu da**
Jon-A house-DEF-DIRECT-PERF A3s-AUX
Jon has entered the house

(b) Jon-ek txakurr-a etxe-ra-tu du
Jon-E dog-A-DEF house-DEF-DIRECT-PERF A3s-AUX-E3s
Jon has put the dog in the house

All the examples that we have seen involve what could be called the **add-an-argument** strategy. This strategy is not restricted to the ergative. As we saw

above, benefactive datives are also freely added (as in Spanish), and in some conservative dialects there is a special way to add the interlocutor's gender to the valence of the clause[15].

7. EXTENDING THE ABSOLUTIVE AND ERGATIVE CATEGORIES. In the examples that we have seen so far the absolutive and ergative NPs were rather uncontroversial patients and agent/causes. In order to maintain a stable formal system however, these grammatical categories have been extended to include more marginal examples of patients and agent/causes. For example, **thematicity** is not a factor for membership in the categories, unlike in ergative languages with an NP-split, where whether an NP can be an absolutive may depend on its *intrinsic thematicity* (with respect to a motivated thematicity scale) or its *relative thematicity* (with respect to the other NPs in the clause). Also, in Basque membership in the category absolutive is not dependent on the relative **affectedness** of the patient, or some related notion, like perfectiveness, as in ergative languages with a tense/aspect/mood split, nor is the relative agentiveness or intentionality of the agent a factor deciding membership in the ergative category. Still, the core of the two categories is semantic, with conventionalized, motivated, though not predictable, extensions (cf. Lakoff 1987).

If we take the prototypical **agent** to be a highly referential, volitional and intentional cause of a change on an object, then we can easily see that the category ergative in Basque includes some quite 'wimpy' agents, including *effectors* (as opposed to *affectors), experiencers,* and *possessors,* the latter two presumably motivated by the fact that these roles entail control over the experience, and over an object[16]. Still, there are limits, and Basque does not easily allow, for instance, instrumental ergatives in the same way that many languages, like Spanish, do not allow instrumental subjects of the *the key opened the door* type (cf. Fillmore 1968) unless they are highly topical.

On the other hand, if we take the prototypical **patient** (and therefore the prototypical absolutive in Basque) to be a highly referential, perhaps animate or human, object totally affected by the action, then also here we find that in Basque the category absolutive has been stretched to include things that case grammarians would have called something other than patient. For example, absolutive patients can be *effected* (as opposed to *affected) objects, source* (of experience) *objects,* and even *possessed objects,* these last two included for the same reason that experiencers and possessors are ergative, namely the 'control' link to the category.

8. THE ULTIMATE EXTENSION. In Section 4 I said that there was an obstacle to the semantic motivation of a category that groups intransitive subjects and direct objects together, namely that for a class of intransitive predicates (broadly speaking, Perlmutter's 1978 *unergatives)* the semantic role associated with their 'subjects' resembles more that of the class of transitive subjects, because of the volitionality and agentivity associated with them. Interestingly, Basque has 'found' a way of reducing the functional load of such predicates (that is, predicates with only one, rather agentive, volitional, or causative participant), by 'transforming' many such predicates into **pseudo-transitive predicates,** with a *transitive verb* (tipically *egin,* "make/do"), plus an *indefinite absolutive NP*[17], which is typically what could be called a generic (non-referential) **effected object** (commonly deverbal noun, cf. English *swim* vs. *take a swim,* and *cough* vs. *give a cough).* Many languages have such alternative paraphrases (cf. e.g. for English Cattell 1984), but what is interesting here is that Basque, which has a productive way of making verbs out of nouns, has a large set of such pseudo-transitive predicates which do not have

a parallel one-argument ('intransitive') verb. A sample of these verbs is given in the Appendix, but crucially they include involuntary bodily function predicates (cf. DeLancey 1985[18]), e.g. *amets egin,* dream-A-INDEF make, "to dream", communication predicates, e.g. *hitz egin,* word-A-INDEF make, "to speak", and many other action predicates, like *lan egin,* work-A-INDEF make, "to work".

What happens here is that the language 'prefers', because of the semantic forces motivating the grammatical category system, to allow even non-referential effected absolutives (a natural extension of the effected patients we saw above) and non-volitional, but causative, ergatives (also a natural extension), rather than to allow agentive or causative absolutives[19].

9. ADDITIONAL SOURCES OF STABILITY. There are some additional factors about Basque which I believe are important for maintaining a stable formal ergative system.

Word Order. Trask (1979) has claimed that "ergative languages nearly always have the basic word order SOV, occasionally VSO, but virtually never SVO" (p. 385)[20]. Why this might be so is not too hard to imagine: SV(O) order always reflects the crystallization of the pragmatic topic-comment pattern, in both transitive and intransitive sentences, whereas S(O)V order (as well as VS(O) order, to some extent) allows intransitive subjects to have it both ways structurally, that is, to be in preverbal position, like the other absolutives (objects), and to be in sentence initial position, like other subjects (ergatives).

The Partitive Case. Basque has a case which we haven't mentioned, namely the *partitive* (-ik ending), which is pretty much in complementary distribution with the *absolutive,* which it replaces in negatives, questions, and exclamations, somewhat in the same way that English *any* is in complementary distribution with *some*. So we could argue that the partitive case 'respects' absolutives by treating them all alike and differently from ergatives[21].

Reflexives. Many languages use intransitivizing mechanisms to convey reflexives. Spanish, for example, uses basically the same *se* construction to convey anticausatives, indefinite agents, and reflexives (3rd person). Other languages, like English, use pronominal participants as place holders. Basque uses the former strategy (intransitivizing) with a few verbs, e.g. *garbitu,* "to wash vs. to wash up", with the ergative argument being left out of the auxiliary, but for the most part Basque is like English in that it uses a reflexive NP. It could be argued that the intransitivizing method 'respects' subjects while the dummy NP method 'respects' agents and patients.

10. A SOURCE OF INSTABILITY IN THE SYSTEM. Finally I would like to look at one source of instability for this delicate formal ergative system, which works against its balance, and which, given the sociolinguistic factors surrounding Basque at present, puts it in danger of collapsing. But first I would like to mention the very important **functional load** factor in the maintainance of the system. In Basque, as in all languages, there is plenty of variation, like different words/phrases, constructions, and strategies to convey similar thoughts. Some of these 'respect' or encourage the ergative-absolutive system, while other forces pull the system in a different direction (i.e. Dubois' 1985 *competing motivations),* and thus contain the seeds of change. Much work needs to be done still to identify and evaluate this variation. For instance, some of the pseudo-transitive predicates may be giving way to simple one place predicates[22].

But let's go back to our one likely major problem. As I mentioned above, only a few verbs in Basque have simple, that is, non-periphrastic, verb forms[23]. These forms express the imperfective aspect. For example, from the verb *e-torr-i,* "to come", we get forms like *n-a-tor,* A1s-PRES-come, "I am coming", and from *e-karr-i,* "to bring", we get a form like *d-akar-kizu-t,* A3s-bring-D2s-E1s, "I am bringing it to you." Now, the 'new' way of expressing the imperfective for the rest of the verbs is a periphrastic, analytic one, by means of a the verb *ari,* "to be busy, occupied", to which the clause is subordinated. For instance, from the verb *j-aik-i* "to rise, get up", we get the imperfective *jaiki-tzen ari da,* rise-IMPERF busy 3sA-AUX, "s/he is getting up". Notice, however, that *jaiki-tzen* is a nominalized sentence, subordinated to *ari.* And as long as *ari* is a separate and 'higher' verb, its auxiliary, the only auxiliary, does not code the lower verb's arguments, but only one absolutive argument, which *controls* the 'main' verb's, *jaiki's,* absolutive argument. But when the lower verb is not intransitive, as in (9), but transitive, as in (10), the upper absolutive argument controls the lower ergative argument, and it looks like we have two absolutives in one sentence. Notice the bracketing, or configuration, in the clauses with *ari,* which doesn't exist in the other clauses.

(9) **(a) Jon jaiki da**
Jon-A rise-PERF A3s.AUX
Jon has gotten up

(b) Jon [$_S$ jaiki-tzen] ari da
Jon-A rise-IMPERF engaged A3s.AUX
Jon is getting up

(10) **(a) Jon-ek liburu-a irakurr-i du**
Jon-E book-A-DEF read-PERF A3s.AUX.E3s
Jon has read a/the book

(b) Jon [$_S$ liburu-a irakur-tzen] ari da
Jon-A book-A-DEF read-IMPERF engaged A3s.AUX
Jon is reading a book

Observe that in (10b) **(i)** the agent participant of *irakurri* ("to read") is not marked ergative, because it is really the absolutive argument of *ari* ("be busy"); **(ii)** the absolutive object of *irakurri* ("to read") is not coded in the auxiliary, since the verb that has the object ('irakurri') does not have an auxiliary verb of its own; and **(iii)** the lower or dependent clause is a unit for word-order purposes, that is, the object ('liburua') in (10b) is not free to move about the sentence by itself, unlike the same object in (10a).

I would not say that we have an actual aspectual split here yet, since this construction is fairly recent, and is still not very frequent. That is this construction does not have a great functional load and it hasn't been fully incorporated into the language yet. At this point two things could happen. First, and most favorably from the point of view of the ergative system, **verb union** could result, by which *ari* would become a modal particle or affix on the verb, and this would allow the 'real' verb's participants to be coded on the auxiliary, (in Trask's 1981 words, they would *penetrate)* and would get rid of the lower sentence node (and its boundaries). This solution would not be a new one, since this has happened in several cases in Basque, most clearly and fully in the case of the synthetic causative which we saw above, in which the causative verb *erazi,* was, for all practical purposes, reinterpreted as a suffix, which adds an argument to the valence of the verb[24]. Some telling evidence that this solution is starting to be envisioned by some speakers is that several recent grammar instruction books (e.g. Salaburu-Etxeberria 1981) prescriptively discourage such usage.

Now, because the *ari* construction expresses the imperfective, which is low in transitivity, there is a possibility that it will not be reinterpreted and that what Trask 'penetration' of the lower predicate's arguments to be coded in an upper auxiliary, will not take place. As I said, it is my impression that until recently this construction was not very common. However, one can see that it is a favorite among the growing non-native, Basque speaker population, perhaps because of the degree to which the verbal paradigm is simplified this way. Thus, the formal or structural consequences of the generalization of the ari-construction, if carried to an extreme, could be twofold: (a) erosion of the ergative absolutive distinction in one sector of the language along aspectual lines, i.e. non-perfectives would have a nominative-accusative construction; and (b) the creation of a verb phrase where now there is none, from the lower embedded sentence, giving the language verb phrase configurationality.

11. CONCLUSION. I have tried to show in this paper that Basque has a delicate morphological system which reflects an underlying semantic reality. The topic or pragmatic peak, which is the major source of subject effects, is not grammaticized because it is indicated by word order. The semantic motivation for this ergative-absolutive system, which are the semantic notions *patient* and *agent/cause,* have been 'watered down' however, through automatization (i.e. lexicalization of the grammatical relations ergative and absolutive), and through motivated extensions, in order to maintain a formally tidy system. Finally, I have shown that this system is in danger of collapsing, and I have identified one major likely source of erosion.

Appendix

CRY negar egin, lit. "make tears"
LAUGH barre egin, lit. "make laughter"
SLEEP lo egin, lit. "make sleep"
SNEEZE usin egin, domistikun egin
VOMIT oka egin, goitikatu, okatu
SNORE zurrunga egin, zurrungatu
COUGH eztul egin
YAWN aharrausi egin
STINK usaina bota, usan egin,

SPEAK hitz egin, lit. "make word"
WORK lan egin, lit. "do work/job"
SLEEP lo egin, lit. "make sleep"
SCREAM oihu egin, lit. "make scream"
SWEAR zin egin, lit. "make swearing"
SAY GOODBYE agur egin,
lit. "make greeting".
LEAVE alde egin, lit. "make way/side"
ESCAPE ihes egin, lit. "make escape"
WINK keinu egin, lit. "make wink"
RUN korrika egin,
laster egin, lit. "make fast"
SMILE irri egin, lit. "make smile"
WALK (ibili), bide egin, lit. "make way"
JUMP jauzi egin, salto egin, etc.
URINATE pix egin, txiza egin
DEFECATE kaka egin
MAKE NOISE zarata/zarotots/hots egin
TURN (AROUND) bira egin, lit. "make turn"
VOTE botu eman, boza eman
BLOW ONE'S NOSE zintz egin, lit. "make snot"
FUCK larrua jo ("hit the skin"),
txotxoka egin, larrutan egin, ñaka egin
MASTURBATE kanpaia jo ("play the bell")
REST atseden hartu ("take a rest")
TAKE A NAP biago egin
WANT gura/nahi/gogo(a) ukan,
lit. "have desire/want"
OBEY esana aditu, lit. "to hear the said"
BARK ahansi egin, zaunka egin
PAY ATTENTION buru-belarri egin,
lit. "make head-ear"
SIP, DRINK zurrut egin

Notes

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† The French word *Basque,* and the Spanish *vasco,* are related to Latin *vasco,* their name for a region of the Basque land in present day Navarre. The Basque name, perhaps related, is *eusk-ar-a,* (also *eusk-er-a,* or *esku-ar-a),* adj. *eusk-al* (or *esku-al),* "the Basque way/manner". Another possible etymology for *Basque* is Bq. *baso-ko,* "of the mountain/forest". The name for a Basque person is *euskaldun,* "one who possesses the Basque way/language", and the name for the country and the nation is *Euskal Herria,* "people/country of the Basque way/language". *Euskadi* is the name of the autonomous Basque region in Spain, first between 1936 and 1939, and then again since 1979.

1. I will not define here *syntactic ergativity,* nor will I argue against the validity of the label with respect to Basque, as I believe that Anderson's facts were basically right. However, there is a lot more going on, as I hope it will become clear by the end of this short paper. For arguments against labeling Basque as syntactically accusative, see Bossong 1984.

2. There are two types of splits. One is the **NP split** in which the E-A pattern is used when the A is high in thematicity as indicated cross-linguistically by some version of Silverstein's (1976) hierarchy, like for instance DeLancey's (1981) explanatorily appealing one. Exactly what the cutoff point is varies from language to language, that is, it is grammaticized for the purpose of automaticity. The other type of split is the **tense/aspect/mood (TAM) split.** Here the E-A construction is used for certain tenses or aspects or moods, while the N-A construction is used in the rest of the cases. It has been argued (e.g. Tsunoda 1981) that Active/Stative languages are really split ergative languages with a verbal split, which could perhaps be collapsed, semantically, with the TAM split.

3. This caveat is important. If 'configurationality' was an all-or-none category, one would not expect to find the fierce arguments seen recently as to whether a particular language is or isn't configurational.

4. By this I mean two things. First we have cases that deviate minimally from the prototype. An involuntary agent (e.g. *Pat accidentally killed Lou)* is not the best example of the category agent. Secondly, we have something like the macroroles **Actor** and the **Undergoer** in Foley & Van Valin (1980, 1984), which subsume what could be seen as motivated separate roles. It should be clear that here we are not talking about 'classical' categories, but about 'prototype-exhibiting' categories as studied in prototype semantics (cf. e.g. Fillmore 1982, Lakoff 1987). What I mean is that, for instance, the semantic categories Patient and Agent have central, or prototypical, cases, which are cognitively based and may be, in some way, 'universal'. However, the extensions from these central cases, while always motivated, may vary greatly from language to language.

5. I am grateful to Sandy Thompson for bringing to my attention DuBois' fascinating paper. DuBois argues for the discourse motivation of E-A patterning in Sacapultec, a language of Guatemala, and couches all this in an illuminating theory of functional motivation of grammar. My argument here, on the other hand, will be about the role of verb semantics in motivating the ergative system of Basque.

6. An example of this in English would be the fact that *I got run over by a car,* is more 'natural' than its paraphrase, *A car ran over me.*

7. For some reason, languages shy away from requiring too much decision making of this type on-line, and lean towards having automatic grammaticized encodings (cf. Givón 1979).

8. In Givón's words: "The great bulk of so-called subject properties used to define the behavior of "deep" ergative languages turn out to be pragmatic **topic** properties, associated with deletion under identity in various grammatical environments (see Dixon, 1972 as well as Heath 1979)." (Givón 1984:166).

9. Incidentally, the relatively high occurrence (statistically speaking) of 'SOV order' in Basque (cf. De Rijk 1969) simply reflects the fact that when we have an ergative NP and

an absolutive NP (not a common occurrence) in the default case, the ergative NP is topic(al) and the absolutive NP is focus(al). (For an somewhat different view, see Brettschneider 1981).

10. The non-finite forms of the verb are: (1) the **stem** or so-called infinitive, e.g. apur, "break"; (2) the **perfective participle,** which is the citation form, consisting of stem + {tu/du, i, n}, e.g. *apur-tu,* "broken"; (3) the **verbal noun,** consisting of stem + suffix t(z)e, e.g. *apur-tze,* "breaking"; (4) the **imperfective participle,** consisting of verbal noun + n (locative, indefinite declension), e.g. *apur-tze-n,* "breaking"; and (5) the **future participle,** consisting of the perfect participle + one of the genitive suffixes (ko/go, en), e.g. *apur-tu-ko,* "to break".

11. This is not always transparent, however, because of diachronic phonological muddling.

12. Many languages have special morphology for either transitivizing or intransitivizing a verb, and commonly the same mark is used to mark both anticausative and indefinite agent (e.g. Spanish).

13. Notice that in English the indefinite-agent construction is restricted to cases in which the focus is on the manner in which the action is carried out.

14. This is the closest that Basque gets to having a passive, given that this indefinite agent construction (or valence-change) can be seen as an agentless passive. However, some linguists have managed to find in Basque one or two sentences of similar, stative clauses, in which an agent is included (though not coreferenced on the verb). This fact, together with some faulty data in the literature, has been responsible for all the recent, misled talk about the Basque 'passive'. For a short and clear exposé, see Trask 1985.

15. This is done by means of a of a special mark on the verb, with gender agreement being coded, e.g.

(a) Jon etorri da: "Jon has come" (interlocutor neutral)
(b) Jon etorri duk: "Jon has come (and you are a man)"
(c) Jon etorri dun: "Jon has come (and you are a woman)"

16. In some ergative languages it makes sense that the possessor should be ergative by the simple reason that the ergative construction arises from a periphrastic possessive construction. In Basque, possessor ergatives are especially common because of the phenomenon known as **possessor ascension,** whereby a possessor argument of a participant is coded on the clause using the 'add-a-participant' strategy mentioned earlier, e.g.

(a) Seme-a Amerik-eta-n dago
son-A-DEF America-DEF-PL-LOC A3s-be(stative)
The (our) son is in America

(b) (Hai-ek) seme-a Amerik-eta-n dute ("possessive" E)
they-E son-A-DEF America-DEF-PL-LOC A3s-AUX-E3p
Their son is in America

Notice that a similar strategy is available in English (e.g. *We have a son in America)* just in case the 'possessed' NP is indefinite. Still, the construction is much more common in Basque, since this is the only way that 'genitive' arguments can be relativized (in conservative dialects only co-indexed arguments, A, E, and D, can be relativized, with other cases being relativizable if the case is identical in both the outside and the relative clauses). The benefactive dative can also be used in a similar way when the verb is not stative, i.e. when there is a real agent involved in the predication, even if it is not coded ergative, e.g. with *joan,* "to go", intransitive with agentive absolutive:

(Gu-ri) seme-a Amerik-eta-ra joan zaigu
(we-D) son-A-DEF America-DEF-PL-DIRECT go-PERF A3s-AUX-D1p
Our son has gone to America

17. Just as the perfective participle is the citation form of the verb (cf. Note 10), the definite declension (singular/plural) is the default or citation form of nouns. Actually, the number of domains in which the indefinite declension is used has been diminishing in recent times. It is typical also that a absolutive participant will be introduced in its definite form even if it is the first time it is mentioned. However, the numeral *bat,* "one" can be used to emphasize indefiniteness, e.g. *liburu-a ikusi dut,* "I have seen the/a book", vs. *liburu bat ikusi dut,* "I have seen one/a book".

18. According to DeLancey 1985, these are a crucial class of predicates about which active/stative languages cannot 'agree' whether they are active or stative. DeLancey argues that this is explained by the fact that for some such languages intentionality, a possible first step in a causative chain, is relevant whereas for other languages it is not obligatoryly so.

19. An interesting class of predicates in this respect is the **weather** predicates. These too are two-place predicates, the absolutive NP being the meteorological effect, and the ergative NP being a mere marking on the verb, e.g. *euri-a egi-ten du,* rain-A-DEF make-IMPERF 3sA-AUX-3sE, "it rains", literally "he/she/it makes rain". This extra argument perhaps was at one time an 'understood' argument, but it's hard to say.

20. When talking about ergative languages it is common to speak of S(O)V order instead of speaking, more accurately, of (E)AV order, because of the syntactic bias mentioned above.

21. Also, this partitive may be a factor in preventing object assimilation of the generic effected objects we saw above (which display absolutely no case or other marks), by endowing them with a non-zero ending in the mentioned contexts. Also important in preventing such phonological or morphological assimilation of these objects is the fact that they may be in other than preverbal position, e.g.

(a) Jon-ek hitz egin du, "Jon has spoken".
Jon-E word-A make-PERF AUX
(b) Jon-ek ez du hitz-ik egin, "Jon hasn't spoken (a word)".
Jon-E not 3sA-AUX-3sE word-PART make-PERF
(c) Jon-ek ez du egin hitz-ik, "Jon hasn't spoken (a word)".
Jon-E not 3sA-AUX-3sE make-PERF word-PART

22. A way in which these pseudo-transitive predicates are less than perfect is that for imperfective situations, some of them have a way of becoming one place predicates by 'turning' the 'fake' absolutive into an adverb, e.g.
(a) **dei egin du:** call-ABS make-PERF 3sA-AUX-3sE, "s/he has called"
(b) **dei-ka ari da:** call-ADV busy(IMPERF) 3sA-AUX, "s/he is calling"

23. The number has been diminishing in historical times (which for Basque means going back about 500 years), and it is set at 20 now, although even some of these are definitely falling into disuse.

24. The diachronic shift from verb to suffix is shown in the following schema:
$E_i\ [_S\ (E_j)\ A_k\ V\ ]_m$ erazi A_m-AUX-E_i $\longrightarrow$ $E_i\ (D_j)\ A_k$ V-erazi A_k-AUX-(D_j)-E_i

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Power to the Utterance

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I was looking for an apt quotation to begin this exercise, and found what I needed in a still unpublished article by Deborah Tannen on the poetics of talk. She says, 'conversational and literary discourse both seek not merely to convince audiences (a logical process) but to move them (an emotional one)'. I would go a step farther and claim that even the process of convincing is as much a product of coaxing, which uses signals of affect, as it is of logical organization. This simply means that in order to persuade, you have to sound persuasive.

The same question is put in the form of a puzzle by 't Hart and Gibbon (1984, 198). They say that 'one of the functions if the intonation pattern' is 'to help reduce the number of possible interpretations that can be given to what is said...'. But--they add--'it is hard to see how the speaker intentionally chooses his pattern precisely for this purpose'.

Let's turn this around and see how far we can get with the notion that beyond the intent to communicate, no intentional choices are involved. The intonation pattern is not imposed on what we say but develops from it, and our hearers grasp our meaning by interpreting how we feel about what we say. They read our intonation as they read our faces.

For many years, since long before The sound pattern of English, analysts have been looking for rule-governed mechanisms for predicting what will be accented and what will not. From time to time they've appealed to word class ('nouns rather than verbs'), propositional structure ('arguments before predicates befor conditions'), position (the last content item), discourse (the 'new' item), and semantics (information focus). All these ideas contain a truth, and each of them will predict correctly the greater part of the time. But not all the time, which suggests that we may have been trying too hard to find a logical solution. The answer, or at least a key to the missing part, lies elsewhere.

I am speaking now of accent, commonly and confusingly referred to as stress, by which I mean prominence conferred by the intonation contour. If we say

(1) What TERrible WEAther we're having!

we have a figure and ground gestalt in which two syllables stick out, the ter- of terrible and the wea- of weather. There is not much disagreement any more about the nature of the obtrusion. The disagreements are about what purposes it serves and how we can tell where it goes.

Accent, as I see the matter, has two functions, and we have been concentrating our attention on just one of them. My term for it is accent of interest. It's the one that involves notions of focus, information, and thematic relations, the one that must be accounted for in explaining how an utterance is understood. Put this way it hardly seems as if emotivity should enter the picture, and yet if we look at how children learn to control it, the picture changes. We know that by age 3 children are in command of a reasonably adult-like system of prosody. They put terminals in the right places and they put accents on the right words. You would think that they knew exactly what they were doing, and that they ought to be able to play the tape backwards and use those contrasts to help them figure out the meaning of what they hear. But for children before about five years of age this seems not to be the case. The response-time tests in experiments conducted by Cutler and Swinney (1986) showed no advantage when the items with which these younger children were tested were correctly accented. After age 5 the subjects rapidly approached the adult norm.

What was happening with these yougsters? The conventional wisdom is that comprehension precedes production, yet the two- and three-year-olds were placing accents correctly without having learned to. The only plausible explanation I can think of is that the children were putting accents on the words that excited them. They knew the meanings, and the pitch prominence was triggered by the way they felt. And their parents and other caregivers were fellow conspirators, doing what is so typical in motherese, exaggerating the interesting words: Look at the DOGGY!, as Anne Fernald points out (p.c.). What I am suggesting is that there is an emotive mediation: the skill that we eventually acquire as manipulators of accent rests on how well we show the way we feel about what we say. If something is new, unexpected, unpredictable, intensely informative, it tends to animate us. And these objective correlations teach us a lot about how prosody meshes with the outside world. But ultimately we're interested in what we're interested in, regardless of newness or informativeness or anything else. To take a humdrum example, when something is repeated we don't usually accent it the second time around, and out of that we fabricate an

objective rule: if an item is repeated, don't accent it. But that is only because repetition is usually boring. When the interest is maintained, so is the accent. As Fred Agard once said to me, Raw FISH is good, but after all, how much raw FISH can you eat!

The second kind of accent I call accent of power. It competes for the same prosodic resources as accents of interest and has to be adjusted to them, but it has an existence of its own. If I say

(2) GOD

how I hate this place!

or

(3) IT'S

no use!

it isn't because I'm excited by the meaning of God or by the referent of it. That accent at the beginning of my utterance is there to bowl you over, to put me in command, to establish my authority. Oaths and imprecations are where we see it in pure form. Listen to two ways in which we can say Jesus Christ and one way we can't. We can say JEEsus Christ! or we can say JEsus CHRIst! But we can't say Jesus CHRIst! That's fine when someone else controls the turn--say when we are answering the question Whom do the Christians regard as Savior? Answer, Jesus CHRIst.

I have to admit that the grammarian half of us is not keen to swallow this kind of flamboyance. Everybody knows that emotion is out there somewhere, but we have trained ourselves to shut it out. We would like to think that there is such a thing as a colorless prosody. It's up to me to demonstrate that this big bang at the beginning that I've just described is an essential part of discourse.

Imagine yourself in the role of lecturer stepping up to the podium and saying to your audience

(4) To DAY'S discussion will be on HEART attacks.

You will not say

(5) To DAY'S discussion will be on HEART attacks.

although that would make a nice answer to someone's question: What will today's discussion be about?

A similar situation is that of story-telling, where the narrator is the authority figure and puts himself in command with that same initial high-pitched accent:

(6) ONCE upon a time there was a REAL SAN ta Claus.

There can be other accents, but the initial accent of power grabs the stage.

I think that at this point it would be instructive to pause a moment and ask how what we've just seen affects the claims dating back to long before the TG era, but continuously repeated since then, that the 'normal' intonation contour for declarative sentences is 231. If by 'normal' you mean a good odds-on bet for a Martian, then there are two normal contours, not one: 231 for answers and 321 for assertions. And by assertion I mean what you do when you are being assertive. If you ask me what my name is and I reply with (7) rather than (8),

(7) My NAME'S JOhn.

(8) My NAME'S JOhn.

you may feel like telling me to get off my high horse, because it sounds rather as if I meant to go on with What business is it of yours? It all depends on what mood you're in.

This same 'being in command' initial bang, given all its other associations, is what we would expect for literal commands, and that is just what we find--an initial high-pitched accent--which you are free to tone down later with a tag if you feel like it:

(9) HAND me the PLIers there, WILL you?

Consider how it would sound to say

(10) HAND me the PLIers there.

That would make a good answer to the question What

would you like me to do?, but it isn't a very good command unless you are rather keyed up, as you might be if there were an emergency of some kind.

So much for the big bang at the beginning. But it's only half the story where accents of power are concerned. There is also a big bang at the end, as plenty of linguists have noticed, though without crediting it with an emotive underpinning. The nuclear stress so-called is simply this terminal bang in a disguised form. If the initial bang is for control, the terminal bang is for commitment. It tells us how keen the speaker is in putting across what he has to say. If he says JEsus Christ! you can relax--he is commenting half-internally; if he says JEsus CHRIst! you'd better watch out. In ordinary discourse we water this down in infinite degrees--may even imagine that we can produce a 'neutral' sentence with no trace of it. But I suspect that if a neutral sentence were possible, the speaker would have to be a corpse.

The reality of that terminal bang can be appreciated to the fullest in the climactic pressure toward the end that often results in the mispronunciation of the last word in a tone group. The speaker is carried away by his emphasis and fails to drop his pitch where the official stress pattern tells him to. Everyone does this some time or other and few even realize it to the point of correcting themselves. Eleanor Smeal, the president of NOW, referring to the way women used to feel about not being engaged, even repeated herself; she said, This was a trageDY! A first rate trageDY! Our KGO talk-show host Owen Spann recently said, When we know everything immediateLY. The result is not necessarily a mispronunciation but may be just a shift of the accent to another word. Notice how calm and unconcerned it sounds to say That was one of the things we wanted to imPRESS upon people. Too calm and unconcerned. What the speaker actually said was That was one of the things we wanted to impress upon PEOple--not intending any contrast with computers or animals; the accent was there for the sake of the power of the utterance. One can only smile at the observation made in 1866 by the visiting Englishman Edward Dicey, writing of a look he had at the American Congress: 'The constant accentuation...of unimportant words, and the frequent misplacement of the right emphasis to the wrong place, make listening to an American debate wearisome to an Englishman' (Dicey 1972, 71; reference from Judy Gilbert). The climactic tendency leaves permanent traces on the morphology, in the stress shifts that occur on words that are likely to be used in an emphatic position--témporarily and primarily become temporárily and pri-

márily; influence becomes inflúence, jústifiable becomes justifiable; the intensive reflexives instead of being contrastively stressed on the element that differs are stressed on the element that remains the same: mysélf, yoursélf, themsélves; and the whole class of verbs and verby nouns and adjectives such as repórt, alért, demánd, arrést, despair, appéal, is permanently scarred by this power struggle. But the process continues, and the permanent shifts are less significant than the ones we freely generate, because they compete with accents of interest. Someone who wants to apologize emphatically does not say ExCUSE me but ExCUSE ME. Someone who wants to warn does not say I wouldn't with accent on I--which is the logical place for the accent since it supposedly means I wouldn't if I were YOU--but says instead I WOULDn't!, with the same climax as in You'd better NOT! And the radio announcers who read from their scripts and seem incapable of getting the right stress on a compound are simply adopting the strategy of making everything emphatic--like the one on KCBS a couple of years ago giving a weather report who said, [The weather] brought thousands of outdoor LOVers to Stimson Beach yesterday.

Now that we've taken care of the two ends, what do we do about the middle? From the standpoint of power, the more accents the merrier. So we can go from absoLUTEly, with one accent, to ABsoLUTEly with two, to ABSOLUTEly with three, to ABSOLUTELY with four. In a brief lifetime of listening I have one attested example of more than one accent on a single syllable, obligingly provided by an angry daughter refusing to do something: NO-O-O! And we get many instances of redundant words thrown in for the sake of their accents. The person who says I did it with my OWN TWO HANDS is presumed not to be emphasizing the nature of inalienable possession or demonstrating an ability to count to two. The speaker who says I won't pay you ONE CENT instead of I won't pay you a CENT is not pointing out the singularity of the indefinite article, and the one who instead of that says I won't pay you ONE RED CENT is presumably not informing us of the color of copper. And besides all this there are set expressions that enable us to go either way--we can be controlled, and say NOT by a HELL of a lot, or we can be defiant, and say NOT by a HELL of a LOT. English supposedly has a rhythm rule that causes accents to back off fron each other: we say INefficient METHod rather than inefFIcient METHod--but for more power we put in both accents, and can even take advantage of the tabooed sequence of accents immediately suceeding one another and say a SO OBvious exCUSE rather than the feeble such an OBvious exCUSE.

The problem now is to see what happens when accents of power and accents of interest are fitted together. One way of harmonizing them is to arrange things so that the most interesting item comes where we would like the biggest bang. Maybe you'd like it at the end so that it will go on echoing in your listener's ear. That's climax. Or maybe you'd rather let it come early and then fizzle out. That's anticlimax. Let's take an example involving two words of low specificity, that are about equal in semantic weight, the word things and the word way meaning 'path'. Suppose you ask me why I don't carry something through the garage instead of lugging it all the way around the house. I can reply with either (11) or (12):

(11) Too many THINGS in the way.
(12) Too many things in the WAY.

If I want to put you rather sharply on notice I'll use the one with the accent on the end. If I want to be good-humored about it I'll put the accent farther back. We can make these power choices without getting into trouble with accents of interest because either way the accent goes on something semantically appropriate. The word things intimates 'clutter' and the phrase in the way intimates 'obstruction'.

The words things and way can be regarded as content words. The examples that are most controversial are those that embody so-called function words. I'm going to give you an example involving the words where and to. The meaning of the sentence has to do with a destination, so--semantically--either the where or the to should be eligible for the accent. I'll give the sentence in four different forms, three of which are acceptably accented and one is not:

(13) I know he went, but I don't know WHERE.
(14) I know he went, but I don't know where TO.
(15) I know he went, but I don't know to WHERE.
(16) I know he went, but I don't know WHERE to.

I hope you spotted the last one as the oddity. The word to is entitled both by its meaning and by its position to get the accent, but it doesn't. Not just because it is the word to. We can show that by comparing the sentence with

(17) I've got to do it SOMEwhere, but I don't know WHERE to.

--this is OK because the to although entitled by position to have the accent, is not entitled to it as a 'mere' sign of the infinitive. But we can put the accent there, and when we do we key things up to a despe-

rate search:

(18) I've got to do it SOMEwhere but I don't know where TO!

In each case the adjustments result in an utterance with the right word getting the bang and the bang coming at the right place.

Of late a good bit of attention has been given to a notion that I dallied with twenty years ago and gave up, namely 'default accent'. If for instance something would go in a normal position for accent but is repeated and accordingly deaccented, then the accent will go looking around for a function word to pick on. If my theory is right, even in this case it will be desirable for that function word to be semantically interesting--that is, appropriate not just grammatically but semantically to the context. Take the to of the infinitive again in this sentence:

(19) Would you refrain from buying it if you were really eager TO buy it?

Buy it is repeated, is deaccented, and the accent falls on to by default. But compare (19) with (20):

(20) Wouldn't you refrain from buying it if you were really reluctant TO buy it?

The same operation has been performed, but now the accent on to seems much less appropriate: the literal 'goal' meaning of to, which was fine with eager, is contradicted by reluctant. But that would not prevent from, if we could use it, as we can in

(21) Wouldn't you hesitate to buy it if you were really discouraged FROM buying it?

It would be easy to get the impression from my description up to this point that speakers are in the habit of pulling out the stops at every opportunity. Actually the opposite is probably closer to the truth, from sheer need to conserve energy. This poses the reverse problem: how do we decide, when an item is new and informative and unexpected etc., that it is not to get an accent? I'll tell you what I think, and then go back and lead up to it: the reason is that something else is more interesting, and we focus on that.

Susan Schmerling has an example (1976, 41-42) that illustrates the point. One day someone said to her, out of the blue, JOHNson died. Both the mention of Johnson and the fact that he had died were unexpected, so why wasn't died accented? Carlos Gussenhoven (1983, 380, 391-92) offers the explanation that there is a 'focus domain' involving an argument, Johnson, and a predicate, died, with a rule attaching the accent to the argument. This

certainly sweeps a lot of problems out of the way, but it also creates others. Suppose Johnson had committed suicide, or suffocated, or had been assassinated. Would that announcement coming out of a clear sky have been JOHNson suffocated? Or imagine that the deceased was someone's mother. The son comes into the room and says to his sister, MOTHer died. It would be a rather heartless sister who did not say at that point, Is that the way to tell me about our MOTHer?!

So what is there that makes JOHNson died normal and MOTHer died not? In the first place, political figures come and go; we can be impersonal about what happens to them. In the second place, die is a rather special verb. It belongs to an open class of coming-and-going verbs that have been called presentative, which bring things and people onto the scene and remove them from it. We say The TRAIN arrived more easily than The TRAIN exploded, or The MAIL'S just been delivered more easily than The MAIL'S just been insured. It's no great task to contextualize so as to get the non-presentative forms, but the presentatives illustrate the limiting case: by simply announcing the name of the argument we create a presumption of presence or absence. There is too little in it to arouse us. Our interest is concentrated on what is more interesting. We can test this strategy by noting how easily the unaccented item can sometimes be left out altogether. Schmerling's speaker might have been asked, Anything in the news today? and replied simply Yes, JOHNson, with the interlocutor chiming in with What happened, did he die or something? The speaker by evoking Johnson makes Johnson emblematic of some event which may require specification but does not command the same degree of interest as the fact that Johnson is the one affected. Though it happens less frequently, the balance can easily go the other way, with the predicate arousing the greater interest. Suppose you notice that I'm looking discouraged and you ask me what's the matter and I reply, People disTRUST me, THAT's what's the matter. Distrust outshines people--for the simple reason that there are always people, just as among verbs there's always a presence and an absence.

But nothing in this analysis precludes there being more than one accent if our interest extends that far. Usually in short utterances we prefer to parcel the accents out one per utterance, so rather than say JOHNson DIED we prefer to say JOHNson. He DIED. In longer utterances extra accents are easily come by. Let's imagine two situations where one speaker, A, is trying to identify a noise, and the other, B, gives the necessary information. A says, What's that noise?, and B replies, in Situation 1, Some SOLdiers. That's enough for A to

identify the sound, 'marching', since soldiers are emblematic of it. If B mentions the word he will not accent it: Some SOLdiers marching. In Situation 2, A is a bigoted employer and the noise is a hubbub coming from the street below. A asks again, What's that noise? and B, who can see out the window, says, Your employEES seem to be STRIKing. Both argument and predicate receive accents; it is less likely that 'employees' will be emblematic of 'striking'.

I won't be so simplistic as to try to claim that everything in accentuation is pure emotional response, that no skills are involved. But I think we have to consider the possibility that intonation is always an emotive vehicle, and that the choices that are dictated by our skills have to be translated into some kind of emotive terms in order to deliver appropriate intonations. The dilemma for analysis is exactly the same as the one posed by Paul Ekman and his coworkers for facial expression. He draws the analogy from the acting profession. When an actor portrays a character in a situation how does he make the action look real? Is it by telling himself 'Now to make my role of returning hero appear authentic I hold my jaw up at an angle of 120 degrees, double my fists, and bend my elbows', or does he say 'I'm going to imagine myself a returning hero and let my feelings take over'? The term for this is Stanislavsky or method acting. I believe that imagination plays the same role in prosody, and that the only time most of us really intellectualize our choices is when we write. It's time--where prosody is concerned--to shake ourselves free of print culture.

Let me summarize my conception this way. There is a child in us. When we wish to express a feeling, we speak through the child. When we make an intellectual choice, we speak to the child, and the child speaks for us.

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TONE AND MELODY IN CANTONESE

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0. INTRODUCTION.

In the study of tonal phenomena, a curious linguist might wonder what happens to the tones in a language when the words are put to music and sung. For Chinese, modern songs in Mandarin and Cantonese exhibit very different behaviour with respect to the extent to which the melodies affect the lexical tones. In modern Mandarin songs, the melodies dominate, so that the original tones on the lyrics seem to be completely ignored. In Cantonese songs, however, the melodies typically take the lexical tones into consideration and attempt to preserve their pitch contours and relative pitch heights. In this study, I will focus on the Cantonese case to study the interaction of tone and melody in that dialect. Cantonese poses an interesting case, since it has level and contour tones that are intersected by a second dimension -- that of tonal register -- to yield a total of six contrastive tones. The interaction of tone and melody in Cantonese has not, to my knowledge, been studied. This, then, can viewed as a preliminary investigation into the topic.[1]

There are two main tasks in this investigation. First, one should determine whether the songwriters had intended to compose with the lexical tones in mind. The claim here is that in tonal compositions -- that is, in compositions that pay attention to the lexical tones -- there would be a close correspondence between tone and melody.

The second task is to study the actual interaction between the tones in the lyrics, and the melody itself. The aim is to determine the degree of correspondence in the tone and melody interface, and more precisely, the extent to which the pitch contours and the relative pitch heights of the lexical tones are preserved in the melody.

The task at hand is then complicated by the need to take into consideration the various factors that might affect the tone-melody interface; for example, melodies imported from abroad, the intrusion of foreign phrases, and the tempo of the songs. These factors will all be considered.

For this study, six modern Cantonese songs were selected which are commerically available on cassette tapes from Hong Kong. The songs were sung by Cheung Kwok Wing, a popular, young, male Hong Kong singer. Four of the songs were recorded in 1984 and two in 1986. Further information on the six songs will be presented later. At this point, some background information on the tonal system of Cantonese is in order.

1. TONAL SYSTEM OF CANTONESE.

Cantonese is traditionally described as having nine tones, in which the tones on checked syllables -- those ending in -p, -t, or

-k -- are counted separately. As a result, there are, in fact, only six contrastive tones. Three of these are analyzed here as level, two as rising, and one as falling. The six phonemic tones are presented in (1), with the specific pitch assignment based on Yuan (1983). The pitch values are transcribed according to the convention of using ascending tone numbers, '1' to '5', with '1' representing the lowest pitch and '5' the highest. Checked syllables are short, and are assigned a single tone number (/5/, /3/, /2/). These syllables do not contrast with the non-checked, level-tone syllables. The checked/non-checked distinction is included for later reference. The aim is to determine whether the tone-melody interface agrees with the phonological analysis.

(1) LEVEL TONES

	Non-checked Syllables	Checked Syllables
High-level:	/55/ (with [53] variant)	/5/
Mid-level:	/33/	/3/
Low-level:	/22/	/2/

FALLING TONE		RISING TONES	
Low-falling:	/21/	Mid-rising:	/35/
		Low-rising:	/13/

It should be noted that the high tone on non-checked syllables is treated in (1) as basically level, /55/. The falling variant, [53], occurs prepausally and in tone sandhi environment, namely before a non-high tone. This is not the conventional analysis, wherein [53] is treated as basic. [55] is then treated as the sandhi form occurring before another high tone. There are at least two reasons for treating the tone as high level. First of all, in Hong Kong today, a number of young people simply have high level for this tone in all contexts. But more importantly for our study, the high tone behaves like a level tone in the interaction of tone and melody. It patterns similarly to the other level tones, /33/ and /22/. What is crucial in the pitch shape of the high tone is not that it falls, or that it is high-falling, but simply that it is high, which is captured by treating the tone as /55/. Evidence to support the treatment of the high tone as /55/ will be presented in the course of the analysis.

The six tones are exemplified in (2) below.

(2) LEVEL AND FALLING TONES

Non-checked Syllables		Checked Syllables	
soeng.55	'wound'	huk.5	'cry'
soeng.33	'appearance'	hok.3	'shell'
soeng.22	'above'	hok.2	'study'
soeng.21	'often'		

RISING TONES

soeng.35	'think'
soeng.13	'ascend'

For typographical ease, a modified transcription system is adopted here.[2] In (2), a period marks the beginning of the tone numbers instead of superscripting them.

The shapes and pitch levels of the tones in (2) are displayed in Figure 1, based on narrowband tracings of single tokens from one speaker. (All figures are placed at the end of the paper.) In Figure 1, the upper portion of the figure displays the level and falling tones. Studying first the non-checked syllables, the three level tones are /55/, /33/ and /22/. They are contrastive for the speaker despite very slight differences in pitch height. The Low-falling /21/ is also distinct. Beginning at roughly the same pitch height as tone /22/, the Low-falling tone is characterized by an initial fall accompanied by low amplitude. Moreover, for some speakers, the tone is regularly accompanied by creakiness. Observe that the High-level tone is indeed level here.

The lower portion of Figure 1 contains the two rising tones. In anticipation of the analysis on the tone-melody interface, these two tones are compared with their corresponding level tones with respect to the end-point, or target. The Mid-rising tone, /35/, is paired with the High-level tone, /55/, while the Low-rising tone. /13/, is paired with the Mid-level tone. In the analysis of the tone-melody interaction, what is crucial in the comparison is the target of the rising tones: for the Mid-rising tone, the target is [5]; for the Low-rising tone, the target is [3]. The significance of these observations will soon be clear.

2. THE DATA: SIX MODERN CANTONESE SONGS

We proceed now to the data, which consists of the following six modern Cantonese songs:

(3) a. Ts'i tsung wui hang wan. (Eventually (I'll) be lucky)
b. Monica.
c. Nung pun to ts'ing. (My desires)
d. Yat tsaan siu ming tang. (A small bright lantern)
e. Stand Up.
f. Haak sik ng ye. (Black midnight)

The six songs were selected, varying in tempo, presence or absence of English phrases in the songs, and whether the melodies were locally-produced or foreign-imported. The information is summarized in (4) overleaf, arranged according to tempo. The subcategorization of the songs into four tempos is based on the "average length per syllable", obtained as follows. The length of the first line of each song is calculated from the beginning to the end of the vocal portion. That length is then divided by the number of syllables in the line, including any potential pauses between syllables. As a result, four distinct tempos emerge, identified in (4) as Slow, Medium, Quick, and Fast. The year that the songs were recorded, 1984 or 1986, is indicated after the title of the song. The 1984 tape is simply entitled "Leslie" (the singer's English name), and the newer tape is entitled "Stand Up".

(4) Summary of information on the six songs.

Tempo	Average Length Per Syllable	Song Title	Foreign Phrases	Foreign Melody
Slow	.84 sec.	Nung-pun to ts'ing ('84)	No	No
Medium	.46 sec.	Ts'i-tsung wui hang wan ('84)	No	No
	.41 sec.	Yat-tsaan siu ming tang ('84)	No	No
Quick	.31 sec.	Stand Up ('86)	Yes	Yes
	.31 sec.	Haak sik ng ye ('86)	Yes	Yes
Fast	.22 sec.	Monica ('84)	Yes	No

3. TONAL STRUCTURE OF THE LYRICS.

Having provided the necessary background information on the tones and the data, we proceed to the first task -- that of determining whether or not the lexical tones were taken into consideration in the composition of the lyrics. This task is accomplished by focussing on stanzas in the lyric that are sung to the same basic melody.[3] For the six songs, there are either two or three stanzas which have repeating melodies. Thus, it is possible to juxtapose the first line of the first stanza with the first line of the second stanza, and with that in the third stanza if there is one. The step is then repeated for the second line of each stanza, and so forth. An example is presented in (5) from "Ts'i tsung wui hang wan" (Eventually I'll be lucky), where three of the stanzas share the same melody. Only the first line of each stanza is given. For the sake of greater clarity, the tone numbers are placed on a separate line. ('L.' = Line, 'S.' = Stanza)

(5) a. Tsoi ts'ing tsoi lei? Ta sam ngo sam? (L.1, S.1)
22 21 22 13 55 55 13 55
(in love in reason? his heart my heart)

b. Soen yyn soen yi, hi-ha pun-sang, (L.1, S.2)
22 21 22 33 55 55 33 55
(obey fate obey desire, (laugh) half-of-lifetime)

c. Hap-ts'ing hap-lei, hoi-sam ts'ing-sam, (L.1, S.3)
2 21 2 13 55 55 33 55
(fair (and) reasonable, happy (and) satisfied)

A quick glance at (5) already reveals that there are definite tonal correspondences among the lines. The songwriter clearly had the lexical tones in mind in composing the lyrics. For a more systematic study, the tones are isolated in (6), with each column of tones identified with an uppercase letter for easy reference.

(6)

	A	B	C	D	E	F	G	H	
a.	22	21	22	13	55	55	13	55	(L.1, S.1)
b.	22	21	22	33	55	55	33	55	(L.1, S.2)
c.	2	21	2	13	55	55	33	55	(L.1, S.3)

Let us now study the matching of the members within each set, identified in (6) by column. For the sets in B, E, F, and H, the tones in each set are identical: in Column B, all the syllables are Low-falling; in Column E, all the syllables are High-level, and so forth. The match in those sets are perfect.

In Columns A and C, the tones in both sets are Low-level. The third member of each set, found in Stanza 3, differs from the others only in that the syllable bearing the tone is checked, and hence shorter. The pairing of /2/ with /22/ is consistent in the data. Parallel cases hold for the pairing of /3/ with /33/, and for the pairing of /5/ with /55/. The matching of the tones in song composition, thus, coincides with the phonological treatment of these tones as phonemically non-distinct from the level-tone counterparts in non-checked syllables.

We turn now to the final cases in Columns D and G. At first glance, they appear to contain tonal mismatches, in which the Low-risng tone, /13/, is paired with the Mid-level tone, /33/. However, observe that both /13/ and /33/ end in a mid pitch level. It would seem that it is the end-point, the target, that is relevant, and not the beginning point. The pairing of /13/ with /33/ is not haphazard, but occurs systematically throughout the six songs. Similarly, the other rising tone, /35/, is systematically paired with its corresponding level tone, /55/. Again, it is the target that is relevant in determining the tonal pairings. It is this pairing of /35/ with /55/ that provides arguments for treating the high tone as level, /55/, rather than falling, /53/.

There are further theoretical implications concerning the behaviour and treatment of the rising tones. Digressing briefly, what is crucial in these tonal compositions is not the direction of pitch change (rising or falling), but the end-point, or target, of the tone, mid or high. The end-points of these contour tones are then paired with the level tones in the dialect. As a result, it would be more appropriate to refer to tone /13/ as "rising-to-mid", and tone /35/ as "rising-to-high". With regard to the beginning point of the contour tones, although they do not play a crucial role in tonal compositions, they are nonetheless necessary for distinguishing rising (and falling) tones from level ones in the phonology. Of paramount importance for linguistic theory is that these tonal compositions can provide a primary source of evidence, hitherto overlooked, to argue in favour of treating the lexical tones in Chinese as sequences of level tones.

Returning to the systematic pairing of /13/ with /33/ and that of /35/ with /55/, if they are considered tonal mismatches,

then about a third of the sets in the data contain mismatches (that is, 77 out of 248 sets). However, excluding these pairs leads to a dramatic drop in tonal violations to less than one-tenth (23 out of 248 sets). Indisputably, the songwriters intended these pairings as permissible rather than abberant. The permissible tonal pairings are summarized in (7).

(7) a. High: /5/, /55/, /35/
b. Mid: /3/, /33/, /13/
c. Low: /2/, /22/

Observe that only the Low-falling tone, /21/, is not included in (7). It is systematically excluded from the tonal pairings in the six songs.[4] This would not be expected if the beginning point of a tone is also relevant in determining tonal pairings. As seen earlier in Figure 1, the Low-falling tone, /21/, and the Low-level tone, /22/, both begin at the same pitch. Tone /21/, however, has an initial fall to an extra low pitch, hence resulting in creakiness for some speakers. Tone /22/, on the other hand, is phonologically level even though it may have a slight, gradual pitch drop prepausally Thus, the crucial difference between the two tones is their phonological shape: one is falling and the other level.[5]

Sets that conform to the permissible tonal pairings in (7) constitute 90.7 percent of the total sets, or 225 out of a total of 248 sets. Only 9.3 percent of the data contains genuine tonal mismatches. A study of the tonal violations reveal that such factors as the tempo of the song, and whether a given song has a foreign melody or contains foreign phrases are not relevant.

4. TONE AND MELODY INTERACTION.

As might be expected from the overwhelming number of cases with appropriately matched tones in the data, there is a close correspondence between lexical tone and melody, otherwise the painstaking efforts of the songwriters would have been in vain. To be precise, there is a strong tendency for the melody to respect the three relative pitch levels, high, mid, and low, and to keep the Low-falling /21/ tone distinct from the other tones. Representative examples are given in Figures 2 and 3. Figure 2 is the tracing of narrowband spectrograms, and Figure 3 the transcription of musical notes showing relative (and not absolute) pitch.[6] Observe in Figure 2 that, in addition to the preservation of relative pitch levels, the rising contours in both the faster tempo and slower tempos are also preserved. The shortening of the syllables in the faster tempo, however, renders the rising contours less perceptible.

In some songs, it is not possible to obtain narrowband tracings due to the strong overlay of music on the tones. This is particularly true for the faster-paced songs with strong beat and loud melody. Recording of musical notes is not sufficiently precise, however, especially for quick pitch changes that are

subtle, but linguistically significant. As a result, a statistical account of the degree to which the melodies preserve the pitch shape and relative pitch height in the six songs must await a follow-up study. Nonetheless, although statistical figures cannot be obtained at this time, some generalizations can still be made. First of all, the tempo of the song, and whether it contains foreign phrases, or has an imported melody, do not interfere in any significant way with the maintenance of relative pitch levels. This is expected, given the minimal degree of tonal mismatches.

While relative pitch levels are, by and large, preserved in the songs, the same is not true of the tonal contours. The crucial factor involves tempo. In faster-paced songs, the tendency is for the tonal contours to be levelled out. This is accomplished by sacrificing the initial pitch rise when time is short. Thus, tone /13/ would be sung as simply mid, [33], and tone /35/ as simply high, [55].

It is important to note that, despite the tendency toward the levelling of tonal contours in faster tempo, the permissble tonal pairings are still preserved, because the target pitch is preserved. From the general observations made here, it can be seen that the constraint in modern Cantonese songs is against the mixing of pitch levels. The loss of pitch contours is not critical, as long as the target pitch level is attained.

5. CONCLUSION.

The impressionistic observation that modern Cantonese songs tend to preserve the relative pitch levels and pitch contours of lexical tones is borne out. Furthermore, the effect of foreign melodies and foreign phrases is neglible. Tempo is the only important factor in affecting the tone-melody interface. A loss, or partial loss, of pitch contours occurs on rising tones in faster-paced songs. Nevertheless, crucially, the loss does not result in tonal mismatches.

The same results do not hold for modern Mandarin songs, where neither relative pitch height nor pitch contours are sacred. This can be demonstrated with a simple example. Figure 4 shows the narrowband spectrographic tracings of the first line of the Happy Birthday song read in (a). In (b), the words are sung to the well-known English tune, "Happy birthday to you". The lexical tones are completely obliterated in (b). Corresponding lyrics do not exist for Cantonese, precisely because the words not only need to convey the desired message simply and naturally, but they must also form a sequence of tones that harmonizes with the melody.

To conclude, this study on tone-melody interaction has several important ramifications. It shows that tonal compositions can provide evidence for choosing the underlying tones in the dialect. It also yielded our first concrete evidence for treating the lexical tones in Chinese as sequences of level tones. Moreover, the results predict that the pitch height dimension would be more critical than the tone contour dimension for Cantonese speakers in tone perception studies. The isolation of the Low-

falling tone from permissible tone pairings suggests that the tone would be similarly distinguished in perception studies. And finally, the findings of this study suggest that a parallel case would hold in the interaction of tone and intonation in Cantonese, in that a faster rate of speech could destroy the initial pitch shape on the rising tones, while greater constraints would exist to minimize the loss of relative pitch height.[7]

Notes

1. Research for this study is supported in part by the Social Sciences and Humanities Research Council of Canada Post-doctoral Fellowship. I thank the many individuals at UCLA for their helpful suggestions and comments. In particular, I thank Peter Ladefoged, Ian Maddieson, Hongmo Ren, Russell Shuh, Shoichi Iwasaki, Rongrong Liao, Ulrica Lau, David Leong, Brian McHugh, and Peter Li, who have helped in different ways to bring about the successful completion of the project. I have also benefited from Arnold Zwicky's helpful comments on the different musical scales used in Chinese versus Western music.

2. The phonetic value for some of the vowels are: aa = [A] (low central vowel), a = [ɐ], y = [y], and oe = [œ]. For the consonants, ng = [ŋ], and y = [y̆] in syllable-initial position before [y], and [j] elsewhere in syllable-initial position.

3. There are also some stanzas that have their own melodies, such as one finds in refrains in English songs. Within these stanzas, one sometimes find adjacent lines sung to the same tune. These lines are also included in the study.

4. Only three cases can be found from a total of 248 sets. They all involve the pairing of /21/ with the Mid-level tone.

5. Vance (1977) treats these two tones as differing only in pitch level (mid-low versus low-low). Very low pitch, however, is not the primary acoustic cue for distinguishing tone /21/ from tone /22/, as his perceptual study reveals. (See Vance 1977 for details.) The proposal here is that the primary perceptual cue is the initial pitch drop in tone /21/.

6. Special thanks go to Brian McHugh for his assistance. The main observation to be made concerning Figure 3 is the maintenance of the relative pitch levels.

7. Some of the predictions made here are in fact borne out in the instrumental studies by Vance (1976, 1977) and Gandour (1981, 1984). The readers are referred to these articles and the works cited therein for further details.

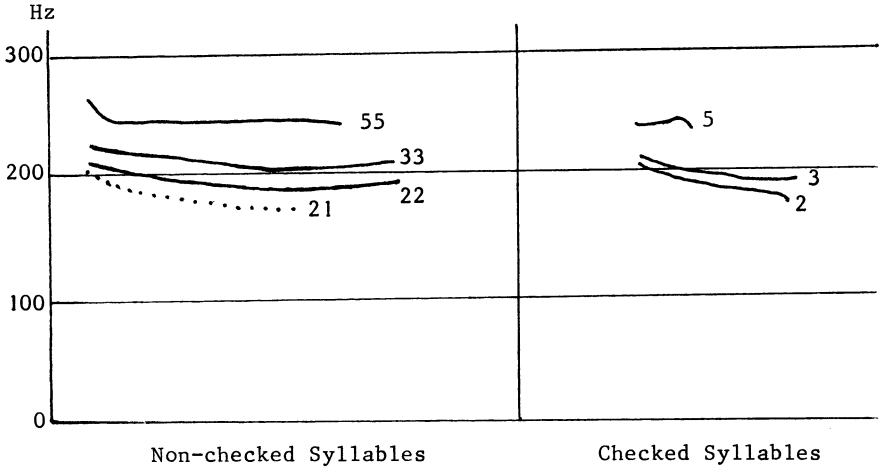
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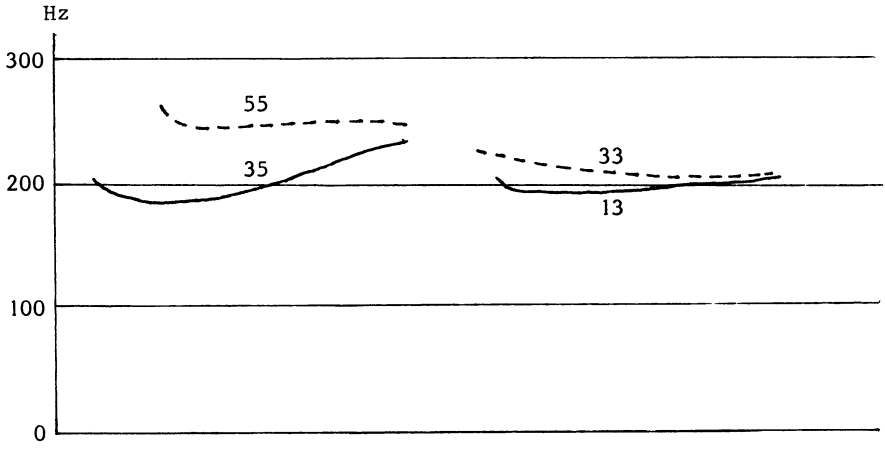
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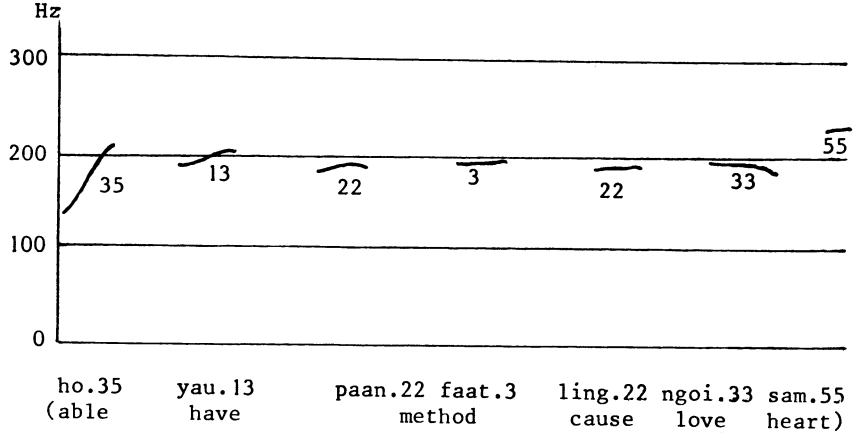


a) Level and Falling Tones. (Level: ——, Falling: ·····)

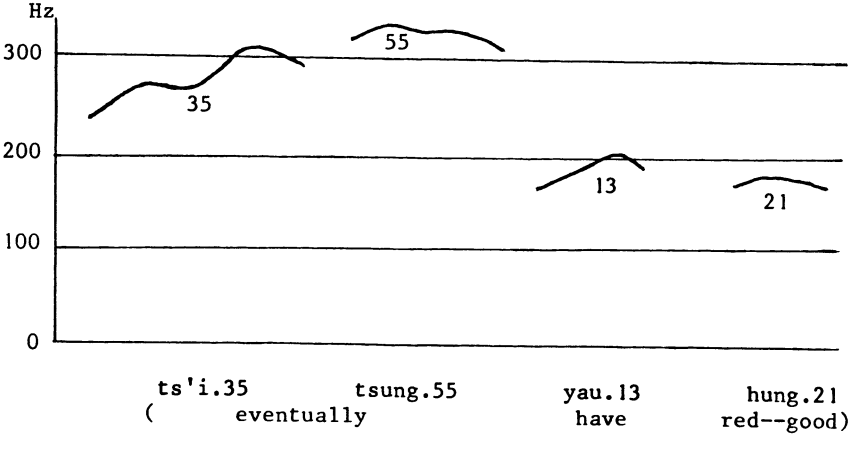


b) Rising Tones (contrasted with corresponding level tones).
(Rising: ——, Level: - - - -)

Figure 1. The tones in Cantonese. (Spoken by UL)



a) Part of a line from "Yat tsaan siu ming tang."



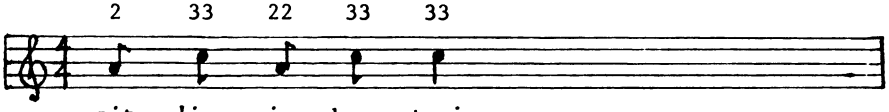
b) Part of a line from "Ts'i tsung wui hang wan."

Figure 2. Preservation of relative pitch levels.



yiu paai tik nei pat yiu taam tang tsai
(sway PRT you NEG need carry small-stool)

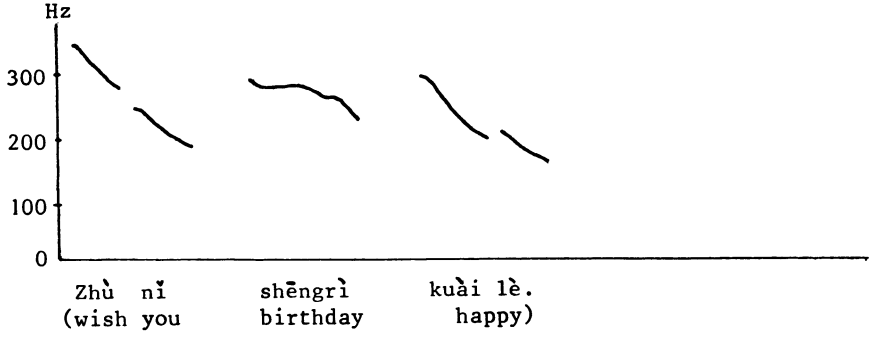
a) A line from "Haak sik ng ye" (Black midnight).



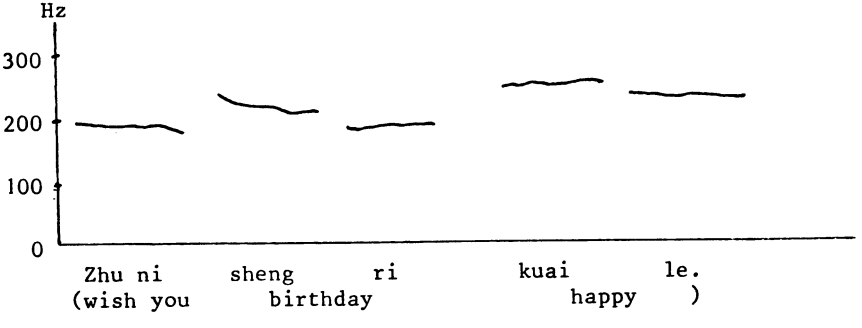
pit p'ing ming hung tsai
(don't risk-life control)

b) A line from "Haak sik ng ye" (Black midnight).

Figure 3. Preservation of relative pitch levels.



a) 'Happy birthday to you.' (Spoken by RL)



b) 'Happy birthday to you.' (Sung by RL)

Figure 4. Tone-melody interaction in Mandarin.

EXPLAINING LEVEL ORDERING, AND HOW NOT TO PARSE A WORD[1]

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Beginning with Allen 1978 (and cf. also the related work of Siegel 1974), a number of researchers have argued that English rules of derivational morphology belong to two disjoint blocks or "levels", and that all of the rules in the first block ("Level 1") must apply prior to those in the second ("Level 2") by virtue of the fact that Level 1 is a module of the grammar that is stipulated (only once) to be an earlier module than Level 2. If this is the case, then it is possible to dispense entirely with English-specific statements concerning the order of application of rules whenever it is the case that one of a given pair belongs to Level 1 and the other belongs to Level 2. In this way, some progress will be made toward **explaining**, rather than simply describing, the interactions of such rules. In this paper, I will argue that, while the level ordering framework seems promising at first glance, a closer look reveals significant flaws. I will then proceed to argue that it is desirable to eliminate level ordering–and in fact morphological rules. In their place would be "subcategorization frames" (Lieber 1980, Churma 1986; cf. also Fabb 1986), which are inherently unorderable. This latter approach will be seen to be preferable for several reasons, including its applicability in psychological and computational models.

1. Level Ordered Morphology.

In order for a level ordering-based theory to have any predictive power, of course, there must be some way of determining, apart from the relative ordering of a given rule, the level to which it belongs. In fact, it has been argued, Level 1 and Level 2 rules differ in a number of respects, in addition to their interaction properties. Some relevant properties of Level 1 rules are listed below:

(1) Properties of Level 1 affixes:
   a. Stress-determining (cf. grammatical/grammaticality, derive/derivation)
   b. Trigger obligatory segmental rules (illegal, opacity, permissive)
   c. Can attach to non-words (inept, ubiquity)
   d. Can have lexical idiosyncrasies about which stems they can attach to (resistance/*consistance, *arrivation/derivation)
   e. Frequently cause semantic opacity (personality, grievance)

Using these criteria, the following lists of representative derivational affixes can be derived:

(2) a. Level 1: -ic(al), -ance, -ity, -ive, -ation, in-
   b. Level 2: -able, -ness, -less, -ize, -ist, un-

If this division into levels is made, then the acceptability facts in (3) follow automatically:

(3) iconicity, restrictiveness, palatalizable, *fearlessity

In the first example, Level 1 *-ity* attaches after another Level 1 suffix, and in the second and third words, we have a Level 2 suffix that attaches after a Level 1 and a Level 2 suffix, respectively. But the only way of getting the final example would be to have Level 1 *-ity* attach after Level 2 *-less*, and this is impossible in a level ordered theory of morphology such as the ones under consideration. Such a theory thus provides an explanation both for why the acceptable examples in (3) are acceptable and for why ***fearlessity*** is not. Furthermore, as Siegel notes, the Level 1 affixes are just those which are represented in Chomsky and Halle 1968 as attaching with a +-boundary, as opposed to those that have a #-boundary,

which are now the Level 2 affixes. Unlike in the *SPE* system, however, there is now a reason for the fact that the latter, which do not have the phonological effects that are characteristic of +-boundary affixes, generally attach "outside of" the former.

In later work (cf. especially Kiparsky 1982, Mohanan 1982), it has been argued that by dividing up phonological rules in a somewhat similar fashion, it is possible to **explain** why the phonological properties in (1) correlate with the order of the affixes. Thus, if we assign phonological rules like velar softening and *in-* assimilation exclusively to Level 1, it will be impossible for these rules to affect the output of a Level 2 morphological rule (1b); similarly, if stress assigment is restricted to Level 1, we can see why affixation of a Level 2 affix has no effect on the stress pattern of the base. Kiparsky also argues in favor of making a further level distinction such that we have the following overall picture:[2]

(4) Level 1: +-derivation and irregular inflection
Level 2: #-derivation and compounding
Level 3: regular inflection

By adopting such a system, Kiparsky argues, it is possible to explain also the following kinds of acceptability facts:

(5) lice-infested, understood, *walkedable, *rats-infested

In the first two examples an irregularly inflected base serves as the input to compounding (where *understood* is analyzed as a compound), but the input to derivation and compounding in the last two would have to be regularly inflected forms–a violation of level ordering if this model is accepted.

In fact, however, the relationship between inflection and compounding is a good bit more complicated than these few cases might lead one to expect, and there appears to be no motivation for distinguishing between types of inflectional processes on the basis of their interaction with compounding. Consider the following:[3]

(6) a. *children psychologist, *mice doctor, *was-in, Publications List, Jets fans
b. Raider Rooters, Women Fencers, (*Girls Fencers; cf. also Lady Bucks)
c. five-dollar bill, 55 mile-an-hour speed limit, trouser leg, Illinois[z]/Illinois[∅] legislature.

In (6a), we see that the predictions made by Kiparsky's model are not always correct, although there are cases (6b) which appear to be appropriately predicted. In (6c), we find that inflections can disappear from what are apparently plural-internal phrases, and that quasi-plural markers (cf. **a trouser*) and even innocent by-standers can be swallowed up by a compound if they look enough like the regular plural marker. Furthermore, as Kiparsky notes (p. 85), the fact that Level 1 inflection cannot provide inputs to Level 2 derivation (or Level 1 derivation, it should be added) "require[s] an ad hoc constraint to block it." While it is unclear exactly what the appropriate explanation for this set of facts is (cf. Churma 1983b for discussion), I think it should be clear that they do not follow from the way in which the ordering of the levels has been revised. I will therefore confine the remainder of my discussion in this section to the interaction of Level 1 and Level 2 derivational affixation.

Aside from the above considerations, the modifications incorporated in Kiparsky's model appear to provide even greater explanatory power, since now both the order of affixation and properties (1a, b) follow from the theory–and without any need for recourse to abstract boundary distinctions. Unfortunately, there are numerous well-known apparent counterexamples to the predictions made by a theory that incorporates a Level 1 / Level 2 distinction of this type (cf. Aronoff and Sridhar 1983, Churma 1983b, and the references cited there):

(7) analyzability, ungrammaticality, inalterability, standardization, capitalistic, transformational grammarian, set theoretic

Thus, we find Level 1 *-ity* attaching after Level 2 *-able* and *un-* in the first two examples, Level 1 *in-* and *-ity* **both** attaching after Level 2 *-able* in the third, and so on.[4] It is possible, of course, to perform various gyrations in an attempt to save the theory. Perhaps the most obvious move is to claim that there are two different, but homophonous, affixes that belong to different levels (cf. note 13), but this kind of approach will not be able to account for, e.g., the behavior of *-ity* and forms in *-able*. Similarly, one can make strange category assignments; thus, Allen 1978–for whom compounding must follow both levels of derivation–proposes that *non-*, which attaches quite freely to the output of compounding (cf. *non-Jets fan*) is not a derivational prefix, but a (bound) word. (This will not, of course, account for the examples in (7).) Kiparsky 1983 makes a more radical move, suggesting that cases like *ungrammaticality* should be handled by means of a new kind of rule, "morphological reanalysis," which would allow the generation of forms in which level ordering is not violated (e.g., [un + [grammatical + ity]]), but which are later reanalyzed so that their morphology and semantics are correct ([[un + grammatical] + ity]). It is also possible to simply relax some of the constraints of the theory; this is the tack taken in Strauss 1982, where it is argued that affix-ordering constraints should be required to hold only with respect to successive applications of the same kind of derivational process (i.e., prefixation or suffixation). (Note that this latter proposal actually entails giving up level ordering.) But even if these proposals are adopted, not all of the apparent violations of level ordering can be explained away. Indeed, given the rich variety of types of apparent counterexamples, it seems unlikely that any reasonably simple patch job can succeed in handling all of the different types of cases. There thus appears to be good reason to simply abandon (tentatively) the hypothesis that morphology is level ordered, and to pursue some alternative hypothesis.

Before doing so, however, I would like to discuss briefly a number of phenomena, in addition to the paradoxes, for which level ordering fails to provide an enlightening account; if an alternative hypothesis does provide an good account of them, then clearly this would constitute a good reason for preferring, other things being equal, the alternative theory. First of all, why does Level 1 come first? The answer is simple within a general theory of level ordering, but not terribly enlightening: it comes first because the analyst stipulates (once, to be sure) that it does. Thus, the theory does not rule out the possibility of there being a language just like English, except that Level 1 comes after Level 2. (The levels would presumably not be given these numbers, but that, of course, is irrelevant.) Secondly, no explanation is provided for why the clusters of properties that characterize the different levels should cluster together. Finally, the admittedly unexplained observation of Mohanan 1982 and Mohanan and Mohanan 1984 that the "lexical representation" (i.e., the output of the lexical phonology/morphology) is the only level that is involved in language games, speech errors, etc., is anomalous from the point of view of the theory.

2. An Alternative: Subcategorization Frames.

In the remainder of this paper, I will argue that, insofar as the above characterizations of the phenomena in question are in fact correct, they can made sense of only if level ordering is abandoned. The model that I will argue for depends heavily on the notion of "subcategorization frame" (henceforth SF), in the sense of Lieber 1980, the use of which will allow one to get rid of, not only the levels of level ordered morphology (and hence the paradoxes as well), but even the morphological rules themselves.[5] Since it is not possible to impose an order of application on a pair of SFs, it will be impossible in principle to achieve the effect that extrinsically ordering a pair of morphological rules would give. At first glance, it might appear that this kind of approach is doomed from the start, since

the use of ordering statements plays a significant role in many approaches, especially with respect to the relative order of inflectional affixes (cf. Anderson 1982). An alternative to this kind of rule ordering will be outlined below.

Crude approximations to the kinds of SFs that would be required for English morphology are given below:[6]

(8) Sample subcategorization frames:
a. Plural /z/: [[X, +PL]$_N$ ___]
b. *-ness*: [[X]$_{ADJ}$ ___]$_N$
c. *-ance*: [[{resist, impede, malfeas-, ...}] ___]$_N$
d. *-ation*: [{[{derive, attest, confront, ...}], [X + {-ize, ...}]} ___]$_N$
e. *-ity*: [{[X, +LAT]$_{ADJ}$, [X + {-al, -able, ...}]} ___]$_N$
f. *in-*: [___ {[{complete, sufficient, -ept, ...}], [X + -able, ...]}]

The case of (regular) plural formation (8a) is quite straightforward: this suffix subcategorizes for attaching to a noun (stem) that has the feature [+PL]. The morphosyntactic/semantic feature [+PL] and the category feature N will percolate to the top of the morphological tree by virtue of a general set of percolation conventions, and hence be visible to further relevant morphological "processes" (in this case, none), as well as the morphosyntax/semantics.[7] Similarly, in (8b), we require that the host of *-ness* be an adjective,[8] but we must also require that the result of attaching this suffix be a noun.[9] It is necessary, however, to stipulate precisely which stems may take *-ance* (8c), just as in the case of, say, nouns that form their plural in *-en*.[10] It is this fact that accounts for why *-ance* may not attach after "Level 2" affixation–not because this suffix and "Level 2" affixes reside in different strata. We must also state which stems may take *-ation* (8d), but this suffix differs from *-ance* in an interesting way: it may also attach to a verb that has been formed by suffixing *-ize* (cf. *spirantization, relativization*, etc.). It is this latter fact about the lexical representation of *-ation* that allows violations of level ordering with respect to these two suffixes–but **not** with respect to *-ize* and *-ance* (**palatalizance*, etc.).[11] That is, "Level 1" affixes are simply those that have fairly restricted SFs. Some are more restricted than others, in that no general subclass of items can be identified, unlike in the case of *-ation* and its fondness for things that contain *-ize*. The fact that *-ity*, too (8e), has a particular fondness for certain other affixes, as well as (monomorphemic) Latinate adjectives (cf. *Latinateness/*Latinatity, restrictiveness/*restrictivity*), explains why it can have a fairly restricted set of monomorphemic items that allow it to attach, and still attach freely to forms that contain "Level 2" *-able*.[12] This in turn entails that some kind of reference to specific affixes must be made in order to account for these facts regardless of the framework employed. The fact that *-ive* is not a member of *-ity*'s select group of affixal friends explains the *restrictiveness/*restrictivity* contrast, as well as the experimental results of Anshen and Aronoff 1981, where it is found that subjects show a strong preference for *-iveness* words over *-ivity* words, but an equally strong preference for *-ability* over *-ableness*. The SF for *in-* indicates that (i) there is no category change involved, (ii) it is somewhat choosy about what it will attach to (cf. **ingrammatical, *innatural*), and (iii) it is particularly fond of adjectives that contain (a relative of?) the *-able* that *-ity* is so fond of (cf. *incompatible, invisible, inviolable, imperceptible, inadvisable*; however, cf. also **inimaginable, *inquestionable*).[13]

There are facts about English derivational morphology that might appear, at first glance, to be problematic for any theory that rejects level ordering. Kiparsky 1982:28 brings up the following set of acceptability facts, which he argues follow from level ordering:

(9)	a.	unable	*unability	inability
	b.	unequal	*unequality	inequality

These facts are said to follow from the ordering of the levels, since Level 1 *-ity* would be unable to attach after Level 2 *un-*, whereas Level 1 *in-* would allow further Level 1 affixation. But in fact the putative inputs to *-ity*-suffixation are themselves unacceptable (**inable, *inequal*), which is problematic for any theory which, like the one advocated here and that of Kiparsky, prohibits the postulation of "bound derived lexical items"(Kiparsky 1982:23). Clear cases of this kind are not easy to find; a search of the on-line *Webster's New Collegiate Dictionary* on the Turing system at Stanford for words that begin with *in* and end with *ity* turned up in addition only *civil* as an example that agreed with both my judgments and the dictionary (I find *instable* unacceptable, but it is listed in *Webster's*). It is thus not clear that we are dealing with anything other than simple cases of lexical listing of the forms in *-ity*.

Note that nothing has been said so far about any distinctions involving derivation, inflection, and compounding. The model as it stands would thus predict rather free interaction of the various kinds of processes. In fact, all logical types of interaction are attested even in English, which has a fairly impoverished inflectional system and hence presents relatively few possibilities for inflection to interact with another type of process, and examples of each have already been given. There appears to be a universal tendency, however, for compounding to take as inputs uninflected stems–a tendency which is as unexplained in the present framework as in any other that I know of (but cf. Churma 1983b, Dressler to appear, for discussion). It is also quite rare for derivation to affect an inflected form, and this kind of interaction seems to occur in English only via an intermediate application of compounding, as in *non-Jets fan* (cf. Churma 1983b), or via zero-derivation of adjectives from past participles (Jensen and Stong-Jensen 1984, Zwicky to appear).[14] But there are apparently genuine cases in other languages in which inflection and derivation abut directly and the derivation is of the garden-variety affixation type, as is the case in, among others, French (Moody 1977), Maliseet (Sherwood 1983), Slave (Rice 1985), Greenlandic (Sadock 1985), and Navaho (Newton 1986), and at least sporadically in German (cf. *Kind-er-chen* 'children-dim.' (Bloomfield 1933, Dressler to appear)). The SF for the regular French adverb-forming suffix *-ment* is given in (10):

(10) French *-ment*: $[[X, +FEM]_{ADJ}$ __ $]_{ADV}$

That is, *-ment* attaches (in the unmarked case) to the feminine form of an adjective (cf. *lentement, franchement*), rather than the masculine. (This assumes, of course–contra Bloomfield–that the feminine is derived from the masculine, and not vice versa.)

Both compounding and inflection present kinds of difficulties that derivation does not. Note that it is probably not desirable to attempt to treat compounding in terms of subcategorization, since it seems counterintuitive to say that, e.g., a noun subcategorizes for attaching to a preceding adjective or another (preceding or following) noun, and it would be extremely difficult to describe the semantics associated with compounding. Much of what goes on in compounding is sensitive to pragmatic factors (cf. especially Downing 1977); surely it is not the job of the morphology to account for, for example, the quite different interpretations normally asigned to *paternity suits* and *maternity clothes*! Syntactico-semantic factors also appear to be heavily involved (Lieber 1983), and it would seem that essentially nothing needs to be said about compounding in the morphology aside from the fact that it happens. Since nothing in the SF of a noun, for example, requires that it attach to any particular kind of element, the facts about compounding will follow without further stipulation, as long as morphology-external factors such as these can be sufficiently well articulated.

Inflection presents a different kind of problem, especially in languages that are highly agglutinative or polysynthetic. This problem concerns how to represent the subcategorization restrictions of "outer" affixes, since there is a wide variety of morphological entities that such affixes may end up next to whenever the intervening material can be only optionally

present. Note that it is not possible to give the outer affixes SFs that contain a disjunction of all of the entities that they may follow (or precede), since there would be no way of preventing the affixes from occurring in alternative orders, unless perhaps there is some way of enforcing a kind of hierarchy with respect to the members of the disjunction, so that the otherwise outermost affix "wins". Even if this kind of hierarchical ordering within an SF were to be allowed, we would find, most strikingly in languages that allow long strings of affixes, that the SF for an affix that occurs immediately outside another affix would have exactly the same SF as the inner affix, except that there would be one more member of the disjunction. Clearly, this massive repetition indicates that a generalization is being missed. This generalization is expressed traditionally by setting up a number of "slots" and specifying which affixes may fill which slots. That is, inflectional affixes typically occur in a fixed order, and the disjunctive SF approach is essentially ignoring this fact, so the problems it faces should not be surprising. Lieber 1980 sets up an elaborate system whose purpose is to get diacritics that, in effect, encode affix-ordering information, and which will form part of the SFs of inflectional affixes, into just the right places. This system is extremely awkward even when dealing with the relatively simple case of Latin, and would become even more so if applied to a language that has more than the three inflectional slots that Latin has. I see no reason why the traditional approach should not be maintained, and adapted to the present system, where it would take the form of a "positive surface filter." (This is one of the alternatives suggested in Churma 1983b, and has also been advocated more recently in Muysken 1986 and Zwicky to appear.) That is, any sequence of inflectional affixes must fit what might be termed an "inflectional template" in order to be deemed well-formed. By making use of such a filter, it is possible to give inflectional suffixes, for example, a quite simple SF, such as the following, where Y is the relevant lexical category:

(11) $[[X]_Y __]$

Given that the suffixes would necessarily be attached simultaneously under the SF approach, the result would be the flat structures that appear to be characteristic of inflection (cf. Newton 1986, Zwicky to appear), as opposed to derivation, where hierarchically arranged structures are the result of affixation. Notice that there is abundant evidence for hierarchical structure in the case of derivation, in the form of the category requirements in the SFs of affixes. For example, since *-ity* attaches only to adjectives, we know that *-able* must have attached to *alter*, **and** created an *ADJ* node at the top of the morphological tree, before *-ity* could attach (and itself create another higher *N* node of the tree). Due to the non-category changing nature of inflection, there can be no parallel kind of evidence for hierarchical structure in such cases. In the absence of evidence for hierarchicality, it would not seem unreasonable simply not to posit any, and this is exactly what the SF approach makes necessary.[15] Thus, the fact that the order of inflectional affixes cannot be handled readily using only SFs need not lead to abandonment of the general SF approach.

The model being proposed, to sum up, has the following properties. Both derivation and inflection are handled in terms of SFs; compounding is the result of free concatenation of relevant words. The semantics of word-formation is strictly compositional (compounding aside), since it is part of the SF. Since no rules are involved (at least not in a crucial sense–cf. note 5), it will not be possible to achieve the effects that ordering full-fledged morphological rules could give. This is desirable, since, for one thing, there is absolutely no evidence that language-specific ordering of morphological rules is necessary (despite apparent evidence such as the order of inflectional affixes treated above). Furthermore, it would not be possible to maintain even that the rules must be linearly ordered, since it would be necessary to allow a single rule to both precede and follow another rule (cf. *Jets fans* and *non-ex-priest/ex-non-believer*) if the rule approach were to be adopted.[16]

It is also worth discussing some aspects of an overall theory of morphology that follow from this kind of model. First of all, morphological productivity will necessarily be a gradient phenomenon, since the degree of specificity of an SF in the lexical representations of affixes can vary widely. It has long been known that productivity is just such a phenomenon.[17] Furthermore, given that the (productive) semantics is compositional, all semantically opaque derivatives must be listed in the lexicon as wholes; indeed, there is no reason even to consider them to be derivatives from the standpoint of the synchronic system, at least in many cases. In order for these kinds of items to develop historically, they would have to have been listed fully before the semantic change took place, as I believe Halle 1973 was the first to point out. There appears to be good reason to believe, however, that (productive) inflection differs from derivation in this respect (cf. Dressler to appear). In addition to the considerations that Dressler adduces, we may add the little-discussed observation noted in Hetzron 1975:870n[18] that speakers of English are not aware of whether or not they have heard a (regularly) inflected form of a sufficiently uncommon stem. (Compare the situation in derivation: we are certain that we have never heard *unequality* (or if we have, that it caused a certain amount of pain in the asterisk-generating region of the brain), despite the otherwise gloriously productive nature of *un-*.) If regularly inflected forms are in the mental lexicon, then it should be possible for us to look them up; but we can't.[19]

If derived forms are listed, then as far as a processing model is concerned, there is no reason for speakers to do anything other than access the mental lexicon (and then inflect the stem appropriately) under ordinary circumstances. Thus, roots and derivational affixes would not normally play a role in the production of a word, or be given as the output of a parse. Only if it is necessary to generate or interpret a new word (or if an existing word cannot be accessed for some reason) will the accessing of anything other than whole stems be required. This picture is supported by the fact that the occurrence of "mistaken word formation" (Cutler 1980:48-9) is quite rare; Cutler found only 119 "clear examples" in her search of all of the error data known to her (e.g., *self-indulgement/self-indulgence, concedence/concession, inconsideration/inconsiderateness, expection/expectation*, and *derival/derivation*). What presumably happened in such cases was that the speakers in question were for reasons that I will not speculate about unable to retrieve the listed word, were thus forced to fall back on their rather feeble productive generation capabilities, and attached the "wrong" affix. Just how "feeble" our productive generation abilities are under ordinary (i.e., "on-line") conditions is unclear. I have one piece of anecdotal evidence that suggests that it is indeed rather feeble. The following discussion (roughly–I unfortunately did not commit it to paper) took place during a meeting of Stephen Stich's Philosophy of Linguistics class at the 1982 Linguistic Instutute, in the course of which the need arose for a word meaning "the property of being a chair" (this was a philosophy course, after all!):

(12) Stich: ... chairness. Chairness? That's not quite right.
Class: [General agreement that it's not.]
Me: Chairity?
Class: [General unhappiness about the suggestion.]
Me: Chairosity?
Class: [More unhappiness.]
Another member of the class: Chairhood.
Class: [General aggreement that this is the right word.]
Stich: Well, at least there's one native speaker around here!

All of the attempts at productive word formation, except possibly the last, were made by reasonably linguistically sophisticated native speakers of English who were not making conscious use of knowledge of English morphology–i.e., were not behaving as (amateur, in

the case of Stich, perhaps) linguists. We "knew" that we needed a noun, and searched our mental lexica for affixes that have as part of their SFs the fact that they create nouns; Stich hit on *-ness* (perhaps because it has the least restricted SF of the noun-forming affixes), and when it was noted that *chairness* is not only not a word, but not a possible word (*-ness* requires an adjective host–cf. (8b)), we had to look for another affix. I found *-ity*, but it was no better (except possibly for its (bad) pun value), for the same reason. One way to remedy the situation is make an adjective out of *chair*, and I did the best I could, but attached *-ous* to a stem that it does not subcategorize for in the process. Only later did one person (out of a class of 15 or so) hit upon the appropriate (and fairly uncommon, to be sure) affix. Unless this class consisted (mostly) of unrepresentatively poor word-formers, then the general human capacity for "on-line" derivational word formation must be sufficiently feeble that it presumably could not regularly take place during speech production.[20]

It also appears that a number of aspects of the model outlined here are desirable with respect to an optimal mechanized speech understanding/generating system. For example, the listing of semantically opaque derivatives will obviate the need for a complex (and ad hoc) semantics in order to get the meaning right in such cases. It is not clear that the all of the psychologically-based aspects of the model should be carried over to a practical computational model. In particular, since it seems desirable that novel productive morphology be possible, affixes will have to be listed in the lexicon. Furthermore, since monomorphemic words, which for the most part form the ultimate base for word formation, will also have to be listed, it would therefore not be necessary to list any derived word that is semantically compositional and a morphologically regular combination of two or more items that are present in the lexicon. Whether or not one actually does so is presumably determined by purely pragmatic factors such as relative amount of processing time required, etc. Interestingly, however, derived forms are listed in most of the work on computational models of English morphology (e.g., Winograd 1983). The prohibition against listing regularly inflected forms **would** probably carry over, however. The sheer number of inflected forms–especially in languages with more than the minimal inflection that is characteristic of English–would make listing all of them prohibitively expensive (cf. Koskenniemi 1983). Note that lexicographic practice also supports this kind of approach.[21] Another advantage of the present model is the inherent lack of directionality that is characteristic of SFs, since they can therefore be used straightforwardly to both generate and interpret morphologically complex words.

3. Comparing the Two Frameworks.

Let us now examine the two kinds of approaches considered here with repect to the phenomena summarized at the end of section 1. First of all, of course, the paradoxes will not exist, because the levels do not, if a SF approach is adopted. Similarly, we will not, strictly speaking, have to say anything about why "Level 1" comes first. But since it looks like, in many respects, there is a Level 1, and that it comes first, it is perhaps worthwhile to attempt to answer a slightly different question–namely, why it **looks like** there is a block of Level 1 rules, all of which (almost) always precede another block of rules, and furthermore are (almost) the only ones that share (usually) the characteristic properties listed in (1) above. Note that nothing in the model developed thus far has anything to say about the properties of "Level 1" affixes–or can in principle have anything to say, once it is denied that Level 1 exists. But, in fact, neither does a level ordering-based theory; these properties are simply inductive generalizations about phenomena that, as a matter of empirical fact, happen to cluster together in English. Level ordering in and of itself in no way predicts that these properties should be characteristic of Level 1, as opposed to Level 2, or for that matter, why some of them could not characterize Level 1, while others are applicable only to Level 2. Nor does it predict anything at all about what the properties of the different levels that might be found in other languages might be (note that the stress-changing criterion,

in particular, would simply be inapplicable, as it is in fact even in English in the case of prefixes). It is quite possible that no theory **should** make such predictions, since it appears that the existence of at least some of these properties (1a-c) is in part simply an accident of the history of English (cf., for example, Strauss 1982).

If the clustering is really accidental from a synchronic perspective, then one might expect it to show at least some signs of deteriorating. In fact, this is exactly what is happening. Thus, alongside forms such as *adorable*, we have *preferable* and *admirable*, and with the stress shift in the opposite direction, *microwávable*, as well things like *pianist*. Similarly, Level 2 *-ize* and *-ist* trigger velar softening (*cliticize, Chadicist, Slavicist*). And words such as *ostracize, pliable*, and *malleable* show that the hosts of Level 2 affixes need not be words. Deverbal *-al* is quite choosy about what it will attach to (cf. **despisal, *surprisal* vs. *revisal*), and there are a number of cases in which the semantics of Level 2 derivation is not compositional (*recital, communist, weatherize, wilderness*, and various forms in *-able*–cf. note 13).[22]

We still do not have an explanation for why it looks like "Level 1" precedes "Level 2," however. Within the SF approach, all that needs to be said is that "Level 2" affixes subcategorize for attaching to a wider range of things than "Level 1" affixes, typically anything that belongs to a given lexical class (cf. (8b)). This entails that they will be able to attach to items that contain either "Level 1" affixes or "Level 2" affixes (or both), as long as the lexical category restrictions are satisfied. Some affixes subcategorize for attaching only to a set of specific items (8c). And some affixes subcategorize for attaching to, among other things, elements that contain "Level 2" affixes (cf. (8d,e)), which is why they appear to violate level ordering. That is, there are, in effect, three different types of derivational affixes in English–not just two, as level ordered morphology would have it. And there is no need to assign these different types of affixes to different levels, since the order in which these affixes occur follows directly from the nature of their lexical representations. The ultimate explanation for the nature of the affixes themselves will have to be a historical one: the "Level 1" affixes came into the language as the result of borrowing. Given that uninflected words are listed in the lexicon (see above), and that it is words that are borrowed, not morphemes, this means that speakers of subsequent generations would have been presented with a set of words that all ended in the same way and had a common element of meaning. But if there were other words that also shared this element of meaning but ended differently, as would have been the case for English deverbal nominalizing suffixes (cf. *arrival, derivation, contrivance*), there would be no way for a learner to formulate a rule that predicts which one is the "default case." If it turns out that it is possible to formulate a partial rule (*-ation* attaches to many forms in *-ize*, but the others do not), this subregularity will turn up in the SF of the affix in question. Apart from this kind of situation, however, the most reasonable thing to do when faced with such facts is simply to memorize which words get which affixes, and this is apparently what speakers do. In the case of infrequent bases, however, it will be difficult for a speaker to find out exactly which form is "correct," and doublets will, on occasion, result (cf. *in-/un-alterable*).

We are still without an account of the phonological effects that "Level 1" affixes have. I would like to suggest that these effects are due to the presence in the SFs of the relevant affixes of a diacritic, to which the rules in question are sensitive. Thus, instead of saying that these rules apply only in Level 1 (and hence never in Level 2), we say simply that the rules apply if the diacritic is present, and they don't if it isn't. Note that this is not really adding anything new to the theory, since in a level ordering-based theory, there would have to be something in the lexical representation of affixes that encodes the level to which they belong–i.e., a diacritic (cf. Lieber 1980:35-6). Unlike in a level ordering-based theory, however, the diacritic and the order of affixation need not always correspond, which the level ordering paradoxes show us is exactly how it should be. If we increase the number of

possible diacritics, so that there can be one that refers to stress-shifting, while another refers to, say, velar softening, we can provide an account of the behavior of *-ize* and *-ist*, where there is no stress-shift,[23] but velar softening applies (as in the examples given above). Of course, allowing for an apparently arbitrarily large number of diacritics lessens substantially the restrictiveness of the theory,[24] but some way must be provided for handling cases of this nature, and a theory that requires level ordering simply cannot provide an account other than lexical listing (and note that the affixes in question attach quite productively, as the examples cited attest).

Note now that Cutler's speech errors show clearly that it is not the case that such errors apply only at (Mohanan and) Mohanan's "lexical" level, given that faulty affixation is possible. Similarly, J.-M. Hombert found that Chinese tone sandhi can provide the input for a game that he taught speakers of various dialects, and a French game rule applies after elision (*l'école* → *quélole*) (cf. Churma 1979, ch. 5 for discussion and references), which indicates that rules that have applied after the lexical level has been reached can determine the input to game rules, and a Fula game rule applies well before the lexical level is reached (cf. Churma 1986). But a weaker form of this claim does in fact appear to be true: the abstract "underlying representations" posited in, say, *SPE* and Halle and Mohanan 1985, never play a crucial role in phenomena such as games and slips. But if such representations exist in a psychologically real grammar of English, then we would expect that they would. Since no one has presented an explanation for why they do not (cf. Mohanan and Mohanan 1984:596n), the most reasonable conclusion to draw, it seems to me, is that these representations simply do not exist. The system outlined here will allow for representations that do play a role in the phenomena in question, and while it does not appear to prohibit the use of overly abstract (in view of the above considerations) representations, it does provide a way of accounting for the productive use of the morphological system in creating and interpreting new words without encouraging abstractness. In this system, there is evidence for the psychological reality of all representations posited; moreover, these representations show considerable promise with respect to playing a role in the construction of computational models of productive morphology.

FOOTNOTES

[1] This paper was written while I was a visiting scholar in the Department of Linguistics at Stanford; I would like to thank the members of the department for their hospitality, and the Center for the Study of Language and Information for providing me with invaluable word processing facilities and support staff, the latter primarily in the person of Emma Pease, whom I would like to thank especially voluminously. I have benefited greatly from discussions with W. Dressler and A. M. Zwicky concerning the issues pursued here; questions after the oral version of this paper by Zwicky and C. Fillmore have led to the inclusion of hopefully clarificatory footnotes. Many of the examples cited here are taken from the works cited in the list of references; I have made no attempt to cite exactly where an example or example type was first discussed. In addition to the "theoretical" literature, I have found Jespersen 1909-49 to be a valuable source both for examples and analysis.

[2] Halle and Mohanan 1985 have proposed an even more elaborate model. Level 1 for them is as in Kiparsky's system, and the last level (Level 4) also contains only regular inflection, but Level 2 contains only #-derivation and Level 3 only compounding. The distinction between Level 2 and Level 3 is made for purely phonological reasons, and they need to adopt a "loop" from the Level 3 morphology back to Level 2 in order to account for the fact that compounds can be the input to #-derivation. This model is thus identical to that of Kiparsky 1982 as far as the morphology goes.

[3]The acceptable compounds have been attested; unacceptability judgments are my own. The *Publications List* was put out by Academic Press, and the *Women Fencers* construction appeared twice (I do not recall which sports were actually involved) in headlines in a recent issue of the Stanford *Daily*. The *X(s) fan* construction is of course quite productive, but there is much idiolectal variation (which is apparently cause for concern among at least some prescriptively-oriented journalists, since the Los Angeles *Times* consistently uses the plural form in such cases); cf. Churma 1983b for discussion. The *Raider Rooters* were advertised some years ago on a San Francisco Bay area bus (although the San Jose *Mercury News* has reported (2/18/87) the recent formation of the "Oakland (not Los Angeles) Raiders Rooters National Fan Club"). The *Lady Bucks* (which is not the contradiction in terms that it appears to be, since *Buck* is an abbreviation for *Buckeye*, a type of nut, so at least no contradictory properties are being attributed here) are the Ohio State University women's basketball team. (If I recall correctly, it is only basketball players that can be *Lady Bucks*; female volleyball players are *Volleybucks*, and participants in other sports are, it would appear, only *Women Xs*.) The *Illinois legislature* example is from Jerry Sadock (p.c.).

[4]When dealing with a pair of suffixes, it is easy to tell which one attaches first (as long as it is maintained that there is no infixation in English). In determining what is going on in the other cases, I employ two criteria, which provide the same characterization in all cases: (i) morphological category restrictions on affixation (e.g., *un-* may attach only to adjectives, not to nouns); and (ii) the semantics (*ungrammaticality* is "the property of being ungrammatical").

[5]There will in fact have to be at least one rule–one which can be stated quite simply in informal terms: "Combine!". In Lieber's framework, the corresponding rule is an unformulated one that is said to create unlabeled "binary branching tree structures" (p. 47), into which lexical items are inserted.

[6]The most significant respect in which these SFs would have to be elaborated is the inclusion of the semantics associated with them. Productive word formation in such a framework would thus have a strictly compositional semantics (unlike, allegedly, in the frameworks of, e.g., Williams 1981 and Selkirk 1982– although these systems do not contain an explicit account of how a non-compositional semantics might work). Semantically opaque derivatives would be listed in the lexicon as wholes.

[7]Alternatively, one could treat [+PL] as being a feature of the suffix, which would then percolate to the top of the tree from the suffix, rather than the stem (this is, in effect, Lieber's approach). I adopt (8a) on the basis that it will provide a way of handling subregularities involving stem-internal changes (which may well not exist in the case of English pluralization), such as those found in the inflection of English verbs that end in *ing* (note that these patterns are extended to new items in language acquisition and historical change–cf. *brought* > *brung, dived* > *dove*), without having to posit some kind of special phonologically null suffix (or prefix) that triggers the change. Instead, we would simply have a morphologically conditioned phonological rule that performs the required change. It will also allow agreement morphology to be done in the morphology (contra, e.g., Anderson 1982): English verb stems that have the features [−PL, 3 PERS, +PRES] can be appropriately inflected in the lexicon, and then inserted into frames for which the morphosyntax requires such feature specifications. Again, the most convincing case for having the features as part of the stem would be when inflection is not done via affixation, and English does not have any productive cases of this type; Fula subject-verb agreement,which is signaled quite generally by a change in the stem-initial consonant, would be a relevant case in point (cf. Churma 1986). Finally, this kind of approach will allow for an explanation of why stems without obligatory inflectional affixes (e.g., Latin person/number suffixes for verbs) are unacceptable; as Lieber 1980:95 notes, in her system, in which the affixes bear such features, affixation must be

optional in order to allow different person/number combinations to be generated, whereas under an approach that makes these features part of the representation of verb stems, inflectional affixation can be considered to be obligatory, aplying whenever the stem has the features for which the affix in question subcategorizes.

[8]The strangeness of forms such as *?grammaticalness* would be attributed to some form of the blocking constraint (Aronoff 1976), whereby the formation of a word is inhibited whenever there is an existing word with the same meaning.

[9]In this respect, I depart from Lieber's approach, in which affixes may be members of the same kinds of lexical classes as stems (in this case, *-ness* would "be a" noun), with the category of the combination being derived via percolation of the classes of the affixes. Nothing crucial hinges on this difference between my approach and that of Lieber, as far as I can see. I adopt the revised approach because of a strong feeling that, e.g., *-ness* is **not** a noun, and for more technical reasons that I cannot go into here (cf. Churma 1987 for discussion).

[10]I have made a simplification here (and an analogous one elsewhere) that is quite likely spurious: given the complete list of items to which *-ance* may attach, it is not necessary to state in the SF for this suffix that the items on this list are all verbs, although there would certainly appear to be a generalization missing from this account. Given the brute-force nature of SF for *-ance*, there is some question in my mind whether there should be an SF in this case at all, since the words in question could simply be listed as units in the lexicon. I include it here because its semantics is, by and large, compositional, and because it can apparently be attached to an inappropriate host in speech errors (see below).

[11]The concern for specific affixes in the formulation of SFs/rules is shared by the quite different theories advocated in Aronoff 1976 and van Marle 1985, although of course there are many respects in which the present approach differs from these. A somewhat uneven critique of Aronoff's approach can be found in van Marle, especially chapter 5.

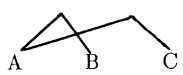
[12]Note that these facts suggest that [+LAT] does not percolate like "real" morphological features (contra, e.g., Lieber 1980, Selkirk 1982). In fact, there would appear to be no need for this purely diacritic feature at all, since we could refer directly in the SF for *-ity* to the monomorphemic roots that may take it.

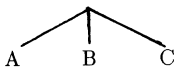
[13]Things are pretty messy with respect to the relationship between *in-* and *-able*, partly because it is not clear how many items that are pronounced [əbl̩] there are (cf. Aronoff 1976, Selkirk 1982). The *-able* of *fashionable, palatable*, etc., seems clearly to be different from the others, in terms of both the semantics and the category membership of the base, and allows only *un-* as a prefix (**infashionable*). What seems to characterize the *-able*(s) that accept *in-* is that they (i) attach to a non-word, (ii) can have a slightly different semantics than "standard" *-able*, and/or (iii) have a radical phonological effect on the base, via "truncation" (if it exists)–cf. Aronoff 1976–or, say, whatever it is that relates *perceive* and *perceptible*. Thus, "standard" *-able* tends to allow only *un-*, as the starred examples in the text indicate. However, both *inalterable* and *unalterable* appear to be acceptable, and most speakers whom I have consulted have only a slight preference one way or the other (*Webster's New Collegiate Dictionary* gives the latter as a synonym of the former, but has a separate listing only for the former). I will not elaborate further on this phenomenon, due to lack of anything to say about it.

[14]There is no explanation within the present framework for the existence of this tendency, but at least it is capable of providing an account of all of the attested kinds of cases, unlike in the case of theories that prohibit universally this kind of interaction of derivation and inflection (cf., for example, Allen 1978, Anderson 1982). For a functionally based approach to an explanation of these facts that is not incompatible with the present framework, see Dressler to appear.

[15]There remains a somewhat technical problem with this kind of approach to inflection:

it requires only that each affix and the stem be sisters; it does not require that all of the affixes be sisters of each other. It thus allows the generation of overlapping tree structures such as (ia), in addition to "normal" structures like (ib):

(i) a. 

b. 

The sisterhood requirements that the relevant SFs would impose on the suffixes B and C are met in both structures, as are the linear order requirements of the filter. Since (ia) does not represent an acceptable word, I take it, there must be some way of ruling out such structures. Of course, we could attempt to add this kind of structure to the set of things that the filter disallows, but it is not easy to see how to do this, especially if we want to maintain the "positive" characteristic of the filter. The best approach, then, appears to be positing that there is a separate principle, analogous (or identical) to the line-crossing prohibition of autosegmental phonology/morphology, that disallows structures like (ia).

[16]Note that, unlike in phonology, it will not in general be possible to squirm out of a (linear) ordering paradox of this type by appealing to cyclic application, since each affixation "process" (or, perhaps, process schema, in the case of the approach taken to inflection taken by Selkirk 1982) creates its own cyclic domain.

[17]It follows from the nature of SFs like that for *-ance* (8c) that such affixes will be totally nonproductive. Whether this is in fact the correct SF for this suffix is an empirical matter, and if it should turn out that there are subregularities concerning its preferences for stem types, then it, like *-ity* and *-ation*, would be "semi-productive." Even totally nonproductive affixes can on occasion be found in the formation of new words, however. Such cases are argued to be due to surface analogy in Churma 1983a, partly on the basis that a single form can provide the basis for the formation of new words, as in the case of the recent adoption of the *-burger* morpheme. For discussion of the role of analogy in word formation from a somewhat different perspective, see van Marle 1985.

[18]Hetzron cites a personal communication from Arnold Zwicky as the source of this observation; Zwicky (personal communication) informs me that a personal communication from David Stampe is his source. It is not hard to see why this observation has not been widely discussed.

[19]Exactly what is meant by the term "regular" is not entirely clear to me. Notice that the verb *stride* lacks a past participle (despite the fact that everyone knows what it would be if it existed), which suggests that the entire paradigm is listed in cases of this nature (cf. also Halle 1973 for a similar Russian example). Some way of distinguishing regular and "irregular" inflection will eventually have to be given, since the two types also appear to behave quite differently with respect to historical change: in the case of irregular inflection, we find "bidirectional leveling" of inflectional paradigms (cf. Tiersma 1978, 1980; Churma 1979, 1983a; Newton 1986), which strongly suggests that the members of such paradigms have been lexically listed. In order to avoid circularity in the explanation for the existence of this kind of leveling, there must be some independent way of determining when an inflected form must be lexically listed.

[20]Notice that our recognition capabilities, at least in this kind of situation, in which the word is presented, in effect, pre-parsed, are considerably better, as indicated by the near-instantaneous recognition, apparently by everyone in the class, of the appropriateness of *chairhood*.

[21]The fact that only inflection is done productively could be a language-specific property; in polysynthetic languages, in particular, much of derivation could conceivably be done on-

line, both by native speakers and computers. Similarly, in languages with extremely fusional inflectional systems, it could well be the case that no inflectional morphology is done on-line.

[22]It could be argued that the suffix in these cases is a Level 1 homophone (cf. Aronoff 1976, Selkirk 1982, although they do not frame their discussions in terms of level ordering). Note, however, that the semantics is most opaque in the case of *palatable* and the like, and that if this latter *-able* is in fact attached at Level 1, there will be no explanation for the fact that the result does not allow prefixation of *in-* (cf. note 13).

[23]Forms such as *pianist* will simply be listed in the lexicon with stress present. This case appears to be truly exceptional in view of forms like *guitarist* and *trombonist*.

[24]Making such use of diacritics does not necessarily result in an "anything goes"-type situation; cf. Churma 1986 for discussion.

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A NEW RELATIONAL ACCOUNT OF SAMOAN QUANTIFIER FLOAT, CASE MARKING AND WORD ORDER [1]

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1.0 Introduction

This paper presents a new way of looking at Samoan syntax in which case marking is determined by initial grammatical relations (GRs) and word order by final GRs. This new account clears up certain problems with Chung's (1976) characterization of Quantifier Float (QF) and also allows us to explain why there is a deviation from basic VSO word order whenever a nominal that would be expected to trigger QF fails to do so, or whenever one that would not be expected to trigger QF does.

Descriptively speaking, Samoan exhibits ergative case marking, i.e. the subjects of intransitive clauses and the direct objects of transitive clauses are in the (unmarked) absolutive case and the subjects of transitive clauses are in the ergative case (marked *e*). The basic word order is VSO but subject and object are permutable: [2]

(1) a. 'Ua alu le tama 'i Sāmoa. (intransitive)
PERF go the boy DIR Samoa
'The boy has gone to Samoa.'
b. Na opo e le tama le teine. (transitive)
PAST hug ERG the boy the girl
'The boy hugged the girl.'
c. Na opo le teine e le tama.
PAST hug the girl ERG the boy

QF in Samoan optionally floats the quantifier *'uma* 'all' from its postnominal adjectival position and cliticizes it to the verb (Chung 1976:194). QF produces (2b) from (2a):

(2) a. 'Ua ō tamaiti 'uma 'i Sāmoa.
PERF go children all DIR Samoa
'All the children have gone to Samoa.'
b. 'Ua ō 'uma tamaiti 'i Sāmoa.
PERF go all children DIR Samoa
'The children have all gone to Samoa.'

According to Chung (1976:198), the following trigger QF:

(3) a. subjects and direct objects regardless of animacy or linear order.
b. animate obliques in immediate postverbal position.

There are problems with this account. With respect to (3a), what Chung would analyze as the subject of a transitive clause does not trigger QF in clauses with verb-erg-abs (VEA) word order

(cf.(4a&b)). Direct objects are not restricted in this manner (v.(4c&d)):

(4) a. E uli 'uma e a'u uō la'u ta'avale.[3]
IMP drive all ERG my friend my car
'My friends all drive my car.'
b. E uli (*'uma) la'u ta'avale e a'u uō.
IMP drive all my car ERG my friend
c. Na 'ave 'uma e le tama tusi.
PAST take all ERG the boy book
'The boy took all the books.'
d. Na 'ave 'uma tusi e le tama.
PAST take all book ERG the boy

(3b) was designed to handle clauses like (5a&b). However, (5c) shows that some animate obliques in immediate postverbal position do not trigger QF. (5d&e) also show that QF affects some inanimate obliques in immediate postverbal position and some animate obliques that are not in immediate postverbal position:

(5) a. 'Ua galo 'uma i tamaiti le tali.
PERF forget all LOC children the answer
'The children have all forgotten the answer.'[4]
b. Na 'ou ta'u-a 'uma 'i tamaiti le tali.
PAST I tell-TRANS all DIR children the answer
'I told all the children the answer.
c. 'Ua 'ou lavea (*'uma) i tamaiti.
perf I hurt all loc children
(I have been hurt by all of the children.)
d. 'Ua galo 'uma i o mātou mafaufau le mea lea.
PERF forget all LOC of we mind the thing that
'Our minds have all forgotten that.'
e. Na ta'u 'uma e Sina 'i tamaiti le tali.
PAST tell all ERG Sina DIR children the answer
'Sina told all the children the answer.'

Assuming that it is basically correct that in Samoan, subjects and objects trigger QF, one general observation that can be made is that there is a deviation from VSO(oblique) word order whenever a nominal that would be expected to trigger QF fails to do so, or whenever one that would not be expected to trigger QF does. More specifically, it is when a transitive subject is not in immediate postverbal position that it fails to trigger QF, and it is when certain obliques appear to the left of an object-like nominal that they do trigger QF. In (6) I propose a new analysis (NA) of Samoan QF, case marking and word order which can account for this correlation. This analysis assumes that the basic word order of Samoan is that given in (6c), that this word order is determined by final GRs, and that initial GRs determine case marking.[5] Below I will show that given this analysis, it is

possible to reduce the list of nominals that trigger QF to simply "2s and final 1s" (v.(6d)).

(6) a. Initial GRs determine case marking.
b. Final GRs determine word order.
c. Order of (final) GRs: Verb 1 2 3 Nonterms[6]
(where "nonterms" refers to chomeurs and obliques)
d. 2s and final 1s trigger QF.[7]

2.0 Quantifier Float in Initially Transitive Clauses

As mentioned above and illustrated in (4b), the problem with (3a) is that what Chung would analyze as transitive subjects do not trigger QF in VAE clauses. In the TA, this fact would have to be considered an exception to the generalization that subjects and objects trigger QF regardless of their linear position. In the NA, I will appeal to the fact that VAE clauses do not conform to the basic VSO word order of final GRs to say that the ergative in a VAE clause is not a final 1 but rather an initial 1 that is put en chomage by an initial 2 advancing to 1. That is to say that VAE clauses are actually passive as opposed to VEA clauses, which are monostratal transitive.[8] Under this analysis, (4a&b) have the structures given in (7a&b), respectively:[9]

(4) a. E uli 'uma e a'u uō la'u ta'avale.
IMP drive all ERG my friend my car
'My friends all drive my car.'
b. E uli (*'uma) la'u ta'avale e a'u uō.
IMP drive all my car ERG my friend

(7) a.

P	1	2
uli	uō	ta'avale

b.

P	1	2
	P	1
uli	cho	
	uō	ta'avale

In the NA outlined in (6), ergatives in VAE clauses fail to trigger QF because they are neither 2s nor final 1s. Ergatives in both VEA and VAE clauses are in the ergative case because they are both initial transitive subjects. An ergative in a VEA clause precedes an absolutive because it is a final 1 and the absolutive is a final 2. Similarly, an absolutive in a VAE clause precedes an ergative because it is a final 1 and the ergative is a chomeur. Absolutives in both clause types trigger QF by virtue of the fact that they are 2s in VEA clauses and both 2s and final 1s in VAE clauses.

3.0 Equi, Raising and Clitic Placement

Facts concerning the Samoan versions of Equi, Raising and Clitic Placement provide independent motivation for treating VAE clauses as passive. According to Chung (1976, 1978), these rules refer to subjects only. All of these rules affect the ergative and not the absolutive of clauses containing an ergative and an absolutive:

(8) a. E mana'o le tama e opo le teine. (Equi)
IMP want the boy INF hug the girl
'The boy wants to hug the girl.'
b. E mana'o le teine e opo *('oia) e le tama.
IMP want the girl INF hug her ERG the boy
'The girl wants to be hugged by the boy.'
c. E mafai e le tama ona opo le teine. (Raising)
IMP can ERG the boy COMP hug the girl
'The boy can hug the girl.'
d.*E mafai (e) le teine ona opo e le tama.
IMP can ERG the girl COMP hug ERG the boy
(The girl can be hugged by the boy.)
e. Na ia opo(-ina) le teine.[10] (Clitic Placement)
PAST he hug-TRANS the girl
'He hugged the girl.'
f.*Na ia opo(-ina) e le tama.
PAST she hug-TRANS ERG the boy
(She was hugged by the boy.)

On the basis of these facts, Chung concludes that the ergative (and not the absolutive) is the subject of clauses containing an ergative and an absolutive. Notice, however, that when these rules take effect, they leave only the absolutive to the right of the verb. This makes it impossible, given the sentences that we have considered so far, to tell whether these rules affect the ergative in VEA clauses, the ergative in VAE clauses, or both.

There is a means, however, by which we can infer in which clause type these rules affect the nominal in the ergative case. This strategy involves the *-Cia* suffix which appears in passive clauses in some other Polynesian languages (e.g. Maori). The prevailing view is that this suffix does not mark passive in Samoan. However, if the present analysis of VAE clauses as passive is correct, we must recognize that there are indeed passive clauses in Samoan in which the suffix occurs.[11] (9a), I would claim, is such a clause. In VEA clause (9b), which would be the corresponding active clause, the suffix is not permitted.

(9) a. Na velo-sia le i'a e le tama.
PAST spear-*Cia* the fish ERG the boy
'The fish was speared by the boy.'[12]
b. Na velo(*-sia) e le tama le i'a.
PAST spear-*Cia* ERG the boy the fish
'The boy speared the fish.'

Given a pair of clauses such as those in (9), it is possible to tell which clause can serve as the "input clause" for Equi, Raising, and Clitic Placement since the *-Cia* suffix occurs in the first (and not in the second) of these clauses. Significantly, the

ergative responds to Equi, etc. in the clause without *-Cia* but not in the clause with *-Cia:*

(10) a. E mana'o le tama e velo(*-sia) le i'a.
IMP want the boy INF spear-Cia the fish
'The boy wants to spear the fish.'
b. E mafai e le tama ona velo(*-sia) le i'a.
IMP can ERG the boy COMP spear-Cia the fish
'The boy can spear the fish.'
c. Na ia velo(*-sia) le i'a.[13]
PAST he spear-Cia the fish
'He speared the fish.'

This indicates that Equi, Raising and Clitic Placement affect ergatives in VEA clauses, but not those in VAE clauses. This fact is problematic for the TA since nominals in the ergative case are supposed to be subjects and subjects are supposed to trigger these rules. In contrast, since the NA distinguishes active from passive clauses, it can easily handle this fact by limiting the nominals affected by these rules to the subjects of active clauses, i.e. to 1s that are both initial and final 1s. This constraint is given in (11):

(11) Only 1s that are both initial and final 1s are affected by Equi, Raising, and Clitic Placement.[14]

Also, since I have found no reason to believe that VAE clauses with *-Cia* differ syntactically from those without *-Cia*, I will assume that VAE clauses are passive whether or not the verb is suffixed with *-Cia*. As illustrated in (12), the suffix in (9a) is optional:

(12) Na velo(-sia) le i'a e le tama.
PAST spear-Cia the fish ERG the boy
'The fish was speared by the boy.'

Since the ergative in a VAE clause is not affected by Equi, Raising, or Clitic Placement, there is motivation independent of the facts of QF for treating the ergative in a VAE clause as something other than a (monostratal) transitive subject. This supports the passive analysis of VAE clauses in which such an ergative is a 1 in the initial stratum but a chomeur in the final stratum.

4.0 Quantifier Float in *Galo* Clauses

Statement (3b) (that animate obliques in immediate postverbal position trigger QF) was designed in part, to handle clauses like (5a); however, as noted above, there are problems with (3b).

(5) a. 'Ua galo 'uma i tamaiti le tali.
PERF forget all LOC children the answer
'The children have all forgotten the answer.'

Clauses like (5a) contain "*galo* verbs", i.e. verbs of understanding and forgetting (e.g. *mālamalama* and *manino* 'be clear/understand', *galo* and *nimo* 'forget/be forgotten', *lilo* 'be lost to view/be beyond one's understanding' and *masino* 'know/be known exactly'). In *galo* clauses (i.e. clauses containing *galo* verbs) the object of understanding or forgetting is in the absolutive and the "locus of cognition" is in the locative case.[15]

Galo clauses exhibit both verb-abs-loc (VAL)and verb-loc-abs (VLA) word order:

(13) a. 'Ua galo le tusi i le tama.
PERF forget the book LOC the boy
'The book has been forgotten by the boy.'
b. 'Ua galo i le tama le tusi.
PERF forget LOC the boy the book
'The boy has forgotten the book.'

Neither the absolutive nor the locative of *galo* clauses is affected by Equi, Raising or Clitic Placement:

(14) a. E le mana'o le teine e galo *('oia) i lona 'āiga.
IMP NEG want the girl INF forget her LOC her family
The girl doesn't want to be forgotten by her family.
b.*E mana'o le tama e galo le teine.
IMP want the boy INF forget the girl
(The boy wants to forget the girl.)[16]
c.*E mafai i/e lou 'āiga ona galo 'oe.
IMP can LOC/ERG your family COMP forget you
(Your family can forget you.)
d.*E mafai (e) 'oe ona galo i lou 'āiga.
IMP can ERG you COMP forget LOC your family
(You can be forgotten by your family.)
e.*'Ua 'ou galo i lo'u 'āiga.
PERF I forget LOC my family
(I have been forgotten by my family.)
f.*'Ua 'e galo a'u.
PERF you forget me
(You have forgotten me.)

Absolutives of both VAL and VLA clauses trigger QF, as do the locatives of VLA (but not VAL) clauses.

(15) a. 'Ua galo 'uma tali i le tama.
PERF forget all answer LOC the boy
'The answers have all been forgotten by the boy.'

b. 'Ua galo 'uma i le tama tali.
PERF forget all LOC the boy answer
'The boy has forgotten all the answers.'
c. 'Ua galo 'uma i tamaiti le tali. (=5a)
PERF forget all LOC children the answer
'The children have all forgotten the answer.'
d.*'Ua galo 'uma le tali i tamaiti.
PERF forget all the answer LOC children
(The answer has been forgotten by all the children.)

To account for this array of data, I propose the following: *galo* clauses contain a 2 and an oblique locus of cognition in the initial stratum. In VAL clauses such as (13a), the 2 advances to 1:

(16)

P	2	loc
P	1	loc
galo	tusi	tama
'forget'	'book'	'boy'

In VLA clauses like (13b), the locus of cognition advances to 1:

(17)

P	2	loc
P	2	1
galo	tusi	tama
'forget'	'book'	'boy'

Equi, Raising and Clitic Placement do not affect either nominal in either clause type because neither nominal satisfies constraint (11) that limits these rules to nominals that are both initial and final 1s. The word order facts of both clause types follow from the structures in (16) and (17) given the word order template in (6c) that requires V-1-2-3-nonterm word order of final GRs. All nominals that trigger QF in these clauses are either 2s or final 1s in agreement with (6d). In the NA, a locative in immediate postverbal position in a *galo* clause triggers QF because it is a final 1. In both clause types its locative case marking is due to the fact that it is an initial "locus of cognition".

This analysis eliminates any need for statement (3b) (that animate obliques in immediate postverbal position trigger QF) to the extent that (3b) concerns *galo* clauses.

5.0 Quantifier Float in 3-to-2 Advancement Clauses

Statement (3b) was also designed to account for clauses like (5b) in which a recipient precedes a patient and the recipient triggers QF. Not all speakers accept these clauses, and so I will mark them with %.

(5) b.%Na 'ou ta'u-a 'uma 'i tamaiti le tali.
PAST I tell-TRANS all DIR children the answer
'I told all the children the answer.

For some speakers, only the patient triggers QF, and it does so whether it precedes or follows the recipient:

(18) a.%Na ta'u 'uma e Sina tali 'i tamaiti.
PAST tell all ERG Sina answer DIR children
'Sina told all the answers to the children.'
(*Sina told the answers to all the children.)
b.%Na ta'u 'uma e Sina 'i tamaiti tali.
PAST tell all ERG Sina DIR children answer
'Sina told the children all the answers.'
(*Sina told all the children the answers.)

Other speakers also extend QF to recipients that precede patients but not to those that follow patients:

(19) a.%Na ta'u 'uma e Sina 'i tamaiti le tali.(=5e)
PAST tell all ERG Sina DIR children the answer
'Sina told all the children the answer.'
b.*Na ta'u 'uma e Sina le tali 'i tamaiti.
PAST tell all ERG Sina the answer DIR children
(Sina told the answer to all the children.)

In order to account for this array of facts, I propose the following. Clauses in which a patient precedes a recipient are monostratal clauses containing a P, 1, 2 and 3. Clauses in which a recipient precedes a patient have the 3-to-2 advancement structure in (20) in which the recipient is an initial 3 (in the directional case) and the patient is an initial 2 (in the absolutive case). The 3 advances to 2, putting the initial 2 en chomage. (20) is the structure of (19a):

(20)

P	1	2	3
P	1	cho	2
ta'u	Sina	tali	tamaiti
'tell'	'Sina'	'answer'	'children'

As can be easily verified, the case marking and word order of these clauses conform to the statements in (6).[17] For the speakers who allow only the patient to trigger QF, QF is limited to initial 2s (and final 1s). For those who also allow a recipient that precedes a patient to trigger QF, this rule is extended to 2s at any level.[18] The rule in (6d) (that 2s and final 1s trigger QF) is in the more general form.

The analyses proposed for *galo* clauses in the last section and for 3-to-2 advancement clauses in this section eliminate any need in the statement of QF for (3b) (that animate obliques in immediate postverbal position trigger QF). These analyses together

with those for initially transitive clauses in section 2.0 make it possible to reduce the list of nominal types that trigger QF to simply "2s and final 1s" (as in (6d)).[19]

6.0 Conclusion

In this paper I have presented a new way of looking at Samoan case marking and word order. By assuming that case marking is determined by initial GRs and that V-1-2-3-nonterm word order is required of final GRs, we have been able to reduce the list of nominals that trigger QF to simply "2s and final 1s". This clears up certain problems with Chung's (1976) characterization of QF. This analysis also allows us to explain why there is an apparent deviation from basic VSO(oblique) word order whenever a nominal that would be expected to trigger QF fails to do so, or whenever one that would not be expected to trigger QF does. In the first case, that of ergatives in VAE clauses, an initial 1 fails to trigger QF and appears late in the clause because it it is a chomeur and not a final 1. In the second case, that of locatives in *galo* clauses and recipients in 3-to-2 advancement clauses, a nominal unexpectedly triggers QF and appears early in the clause because it has advanced to 1 or 2.

Where this new analysis departs from usual assumptions is in its treatment of case marking as an indicator of initial rather than final GRs. The fact that this assumption makes the present analysis of QF possible raises two questions: (1) Are there other languages which could felicitously be analyzed in a similar manner? and (2) What other assumptions about how languages are organized might we needlessly be maintaining?

FOOTNOTES

1. Fieldwork for this paper was funded by grants from the Academic Senate of UC San Diego, for which I am grateful. I would also like to thank my consultants Falana'i Ala, Susitina Kinuta, Kereti Misailegalu, Sulufa'iga Pa'ala, Lētau Seumālō, Tauelia Togāfau, and Willie Uili for their patience and assistance. Any errors in this paper are my own.

2. Chung (1978:12-15) claims that in Samoan and other Polynesian languages, the basic word order is VSO. She also points out that there are departures from the basic word order, e.g. pronouns tend to be attracted to the verb regardless of their syntactic function and agents tend to precede nonagents. In the analysis I am proposing here, at least some of these departures from basic VSO word order would involve nominals bearing different grammatical relations at different levels. For Chung, these departures would not involve such "changes" in grammatical relations.

Also, see Ochs (1982) for interesting sociolinguistic observations concerning Samoan word order patterns. If the analysis proposed in this paper is correct, her observations, which are stated in terms of SOV vs. VOS word order, will be statable in terms of voice (active vs. passive).

3. The absence of a determiner is an indication of plurality.

4. Examples are glossed in either active or passive, whichever maintains the left to right word order of the Samoan sentence.
5. Chung (1978), in analyzing "affected locatives" that undergo rules that refer to direct objects, assumes that they are "the derived direct objects of their associated, underlying intransitive verbs". Since generally there is no "change" in case marking of such "derived direct objects", it is only fair to say that the analysis of case marking as an indication of initial GRs is not my invention but was already present in at least part of Chung's analyses. However, the extension of this approach to the entirety of the Samoan language is new.
6. The symbols 1, 2, and 3 stand for subject, direct object, and indirect object, respectively. See Perlmutter (1983) and Perlmutter and Rosen (1984) for more on the terminology and concepts of relational grammar.
7. It will become clear below why 2s in (6d) are not restricted to any particular stratum.
8. This is a somewhat revolutionary stance to take, considering that the majority of linguists who have recently studied Samoan in depth (e.g. Chung (1976, 1978) and Milner (1962, 1966, 1973)) have concluded that Samoan does not have a passive construction. I took the same position as Milner and Chung in Cook (1978).
9. The diagrams I am employing here are abbreviated stratal diagrams in which the top line represents the initial stratum and the bottom represents the final. P stands for predicate, and cho for chomeur.

The passive structure in (7b) is not the only one in which an initial 1 is not a final 1. It would also be theoretically possible, given the present data, to assume, for example, that a silent dummy puts an initial 1 en chomage in some kind of impersonal construction. I will not entertain this possibility in this paper because such an approach introduces an added element (a dummy) whose presence is not required in order to account for the Samoan data dealt with here.
10. The transitive suffix *-a/-ina* which appears in (5) is related to the suffix *-Cia* which will be discussed below. In Cook (1978) I treated *-a/-ina* and *-Cia* as if they were the same suffix, but I now believe that they should be treated as two separate suffixes which have overlapping functions. In Cook (1978) I followed Chung (1976) in analyzing the suffix in clauses like (5a) as a "flag" for a fronted subject. That analysis, I believe, is still viable, but see footnote 17.
11. This is not to say that this is the only context in which *-Cia* occurs. See Chung (1976, 1978) and Cook (1978) for more on *-Cia*.
12. This sentence is from Milner (1966:316) where it is glossed 'The boy has speared the fish.' Milner's gloss here reflects his (1962, 1966, 1973) opinion that *-Cia* indicates perfective aspect.
13. (10c) is possible with *-a/-ina* rather than *-Cia* (see footnotes 10 and 17).
14. I have not stated this constraint in terms of monostratal 1s because the 1 of a 3-to-2 advancement clause (see below) is

afected by these rules and such clauses are not monostratal.
15. *Mālamalama* and *manino* also appear in middle clauses (described in footnote 19 below) and *galo*, for some speakers, occurs in (initially) transitive clauses (Chung 1978:205). *Galo* is probably cognate with *gālo* 'disappear/fade away'. The verbs *pa'u* 'fall (in the sense of a resposibility falling on someone)' and *pogai* 'to be caused (by someone)' occur in structures like those proposed here for *galo* verbs. Verbs like *lavea* and *manu'a* 'be hurt' that express adverse events are often treated as belonging to the same ("stative")class as *galo* verbs, but there are syntactic, as well as semantic reasons for treating them as belonging to a different class. For example, (5c) shows that these verbs, unlike *galo* verbs, occur in clauses with clitics.
16. (14b) is grammatical on the reading 'The boy wants the girl to be forgotten'.
17. (5b), the clause with which we began this section, might very well involve passive as well as 3-to-2 advancement. I make this suggestion based on the fact that clitics in initially transitive clauses fail to trigger QF (which suggests that they are not final 1s) and on the tendency for the *-a/-ina* suffix to occur in such clauses (*-a/-ina* is related to the *-Cia* suffix which I have claimed occurs in some passive clauses without clitics (e.g. (9a)). See also footnote 10.
18. These clauses are reminiscent of Niuean sentences described by Seiter (1979) in which instrumentals in initially transitive clauses undergo all the rules that affect 2s. Seiter, working in a derivational version of relational grammar reaches the conclusion (interpreted into the present framework) that in Niuean, instrumentals and initial 2s are 2s at the same level in violation of the Stratal Uniqueness Law. (The SUL prohibits more than one nominal bearing the same term relation (1, 2, or 3) at a given level.) My analysis of the Niuean data would be that instrumentals in initially transitive clauses obligatorily advance to 2 putting initial 2s en chomage. Furthermore, the rules that refer to 2s would not be restricted to 2s at any particular level. This analysis would not entail a violation of the SUL.
19. Chung (1976:196) also states that "locatives directly affected by the action of an intransitive verb" and objects of middle clauses trigger QF. In my own fieldwork, I have found that very few speakers allow QF with locatives (other than those in *galo* clauses), and whether or not they are directly affected by the action of an intransitive verb does not seem to matter. Also, if they allow QF with locatives, they also allow it with goals. My analysis of locatives and goals that trigger QF would be that they are initial locatives/goals that advance to 2; (i), then, for those speakers who allow it, would have the structure in (ii):

(i) %'Ua nofo 'uma 'oia i nofoa i le potu lenei.
PERF sit all he LOC chair LOC the room this
'He's sat in all the chairs in this room.'

(ii)

P	1	loc
P	1	2
nofo	'oia	nofoa
'sit'	'he'	'chair'

I have also found that very few speakers allow QF with objects of middle clauses (i.e. clauses that contain verbs of emotion, perception, etc. that take a subject in the absolutive and a complement in an oblique case). I would analyze middle objects as initial 3s, and for those speakers who allow clauses like (iii), in which a middle object triggers QF, the middle object advances from 3 to 2 (as illustrated in (iv)).

(iii) %E mana'o 'uma 'oia 'i teine o le nu'u.
IMP want all he DIR girl of the village
'He wants all the girls of the village.'

(iv)

P	1	3
P	1	2
mana'o	tama	teine
'want'	'boy'	'girl'

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English Possessives, Topicality, and the Silverstein Hierarchy

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Unlike many languages (e.g., French) English has two distinct Possessive constructions. One takes the form:

(1) a. his foot
b. John's house
c. the King of England's crown.

It has the following properties: first, the possessor NP precedes the possessed noun; second, the possessor NP is marked. Personal pronouns take special possessive forms (my, our, your, his, her, its, their.) Other NPs have a clitic, written -'s, attached to the last word in the phrase. I will term this construction the prenominal possessive. The second possessive takes the form:

(2) a. a friend of Mary
b. the house of the King

In this construction, the possessor NP follows the possessed noun and the possessor NP is marked by the preposition of. I will term this the postnominal possessive.

Certain differences between the two possessives will not concern us here. For example, the prenominal possessive is inherently definite. Thus each of the following pairs are paraphrases:

(3) a. the bicycle's handle
b. the handle of the bicycle
(4) a. the city's destruction
b. the destruction of the city
(5) a. the man's anger
b. the anger of the man

Another difference occurs with partitive nouns, which occur almost exclusively in the postnominal possessive, as (6)-(8) illustrate.

(6) a. the edge of the room
b. ??the room's edge
(7) a. the rest of the journey
b. *the journey's rest
(8) a. the smaller portion of the army
b. ??the army's smaller portion.

Other differences will prove relevant later, but I will leave these aside for the time being. for example: (i) the postnominal possessive is more acceptable with indefinite and generic possessors; (ii) the postnominal possessive is more acceptable

with long or complex NPs; (iii) the postnominal possessive is more acceptable if its meaning is contrastive. (9) illustrates these facts.

(9) a. That is the footprint of a deer. (vs. 'a deer's footprints')
b. That is the foot of an old man from Paris. (vs. 'an old man from Paris' foot')
c. The cars of this salesman are truly top quality. (vs. 'the salesman')

Now, if these differences have been set aside, the two constructions seem practically interchangeable: so interchangeable that some theories attempt to derive one from the other. However, the two constructions are not totally interchangeable. Often one of the two will be preferable to the other, and sometimes only one will be acceptable. Consider (10) for example.

(10) a. I met the boy's uncle.
b. I met the uncle of the boy.

Here the prenominal possessive is better: (10a) is much more acceptable than (10b). On the other hand, in (11) it is the postnominal possessor which is more acceptable.

(11) a. I opened the building's door.
b. I opened the door of the building.

None of this data is new. Jesperson's Modern English Grammar (vol. 7: pp. 206 ff.) details the cases in which one of the two possessive constructions is to be preferred. Many factors seem to be relevant. One of the most important is animacy: animate possessors prefer the prenominal possessive. Inanimate possessors prefer the postnominal possessive. This is the most obvious factor, and one which is noted in many works (cf. Hawkins 1980; Quirk, Greenbaum, Leech and Svartvik 1972.) But there are many other factors also. For instance, personal pronouns show a strong affinity for the prenominal possessive.

(12) a. my foot
b. *the foot of me

And there are other factors which we will examine in detail shortly.

All of these facts have been noted before, but they have not been explained. It is quite clear that animate and pronominal possessors occur most naturally in the prenominal possessive, and that inanimate possessors occur most naturally in the postnominal construction. But why? An answer to this question lies in the so-called Silverstein Hierarchy.

The Silverstein Hierarchy was originally developed to deal with the problem of split-ergative case marking systems. In a simple ergative language, the subject of an intransitive sentence receives the same case marking as the object of a transitive sentence. The subject of a transitive sentence receives a special case--the ergative case. Ergative languages contrast to accusative languages, in which it is the object of a transitive sentence that receives a special case (the accusative.)

Split-ergative languages are languages in which some NPs are marked according to the ergative pattern, but in which others are marked according to the accusative pattern. There are many languages, for example, in which every NP receives ergative case-marking except first and second person pronouns, which follow the accusative pattern. There is a bewildering variety of split-ergative languages. The Silverstein hierarchy brings order to this variety, making it possible to predict exactly what kinds of split-ergative systems are possible.

Essentially, the Silverstein hierarchy ranks NPs according to their inherent lexical content. At the top of the hierarchy are highly context-dependent forms: first, second, and third person pronouns, proper names, and other indexical elements (including kin-terms or social indexicals.) Next comes NPs denoting relatively salient referents: humans, nonhuman animates, and concrete inanimate objects. At the bottom of the hierarchy lie those NPs which denote relatively undelimited or abstract entities. It may be summarized as follows (with some simplifications):

1st person pronoun > 2nd person pronoun > 3rd person anaphor > 3rd person demonstrative

> Proper name > Kin-Term > Human and animate NP > Concrete object

> Container > Location > Perceivable > Abstract

Split-ergative systems can be predicted by interpreting this array as an implicational hierarchy. If a given NP type receives accusative case marking, then so must every NP type above it in the hierarchy. Conversely, if a NP type receives ergative case marking, so must every NP type beneath it in the hierarchy.

But what does this have to do with English possessives? Everything. For the Silverstein hierarchy can also be used to predict the acceptability of prenominal and postnominal possessives in English. We may make the following generalization: the higher the possessor NP is on the Silverstein hierarchy, the more acceptable it will be in the prenominal possessive, and the less acceptable in the postnominal possessive. Conversely, the lower a NP is on the Silverstein Hierarchy, the more acceptable it will be in the postnominal possessive, and the less acceptable in the prenominal possessive. The following chart illustrates how

possessives are more acceptable toward the top of the hierarchy if they are prenominal possessives, and how postnominal possessives display the opposite pattern.

Possessor is	Prenominal Poss.	Postnominal Poss.
1st or 2nd person pronoun	my foot	the foot of me
3rd person animate pronoun	his foot	the foot of him
3rd person inanimate pronoun	its foot	the foot of it
proper name	Bill's foot	the foot of Bill
kin term	my uncle's foot	the foot of my uncle
human lexical NP	the man's foot	the foot of the man
nonhuman animate	the dog's foot	the foot of the dog
inanimate discrete	the bicycle's handle	the handle of the bicycle
place or location	the house's roof	the roof of the house
. . .		
Abstract (properties, essences, etc.)	the century's beginning	the beginning of the
	his honor's nature	the nature of his honor
	Israel's nation	the nation of Israel

Of course, there are many different types of possessives. We must distinguish semantically distinct types of possessive, each of which will display slightly different behavior. Despite this, the Silverstein hierarchy yields useful predictions.

Consider the following data, for example.

(13) a. I hadn't seen my Jimmy in ages.
b. I haven't seen your Jimmy in ages.
c. She hadn't seen her Jimmy in ages.
d. It turned out the man wasn't Mary's Jimmy at all.
e. ? Have you seen my daughter's Jimmy recently?
f. ?? Have you seen my friend's Jimmy recently?
g. * Have you seen the carpenter's Jimmy recently?

This version of the possessive construction identifies an individual with a certain name by identifying a related individual. Now, as (13) illustrates, the prenominal version of the construction is most acceptable if the possessor is from the

topmost part of the Silverstein hierarchy. After that acceptability deteriorates quite rapidly. If the possessor is an animate lexical NP, the meaning is clear but the construction is unacceptable. Further down, this interpretation is not even possible, and a postnominal possessive must be used instead. Thus, (14a) does not function to identify which Napoleons are being discussed. If that is the intended meaning, (14b) is far more natural.

(14) a. This country's Napoleons were all dictators.
b. The Napoleons of this country were all dictators.

But the postnominal construction cannot be employed higher in the hierarchy. The sentences in (15) are therefore unacceptable.

(15) a. * I hadn't seen the Jimmy of me in ages.
b. * You haven't seen the Jimmy of you in ages.
c. * She hadn't seen the Jimmy of her in ages.
d. * Have you seen the Jimmy of my daughter recently?
e. * Have you seen the Jimmy of my friend recently?
f. * Have you seen the Jimmy of the carpenter recently?

All of this can be summarized very simply. We start with the generalization that prenominal possessives go with the top of the hierarchy, and postnominal possessives go with the bottom. Then we give a cut-off point for each construction. In this case, the cut-off points are: (i) Relation terms for the prenominal possessive; (ii) Inanimate lexical NPs for the postnominal possessive.

Other constructions may have different cut-off points, but the correlation with the Silverstein hierarchy will remain the same.

Consider, for example, the behavior of possessive constructions headed by abstract nouns like loyalty. Such nouns allow a wide range of prenominal possessives:

(16) a. My loyalty must not be questioned.
b. Your loyalty must not be questioned.
c. His loyalty must not be questioned.
d. John's loyalty must not be questioned.
e. His uncle's loyalty must not be questioned.
f. His friend's loyalty must not be questioned.
g. The carpenter's loyalty must not be questioned.
h. The city's loyalty to its founder was beyond doubt.
i. ?? I would often meditate on love's loyalty.

Postnominal possessives are almost as broadly distributed.

(17) a. * Just consider the loyalty of me to stand there so long.
b. * Just consider the loyalty of you to stand there so long.
c. ? Just consider the loyalty of him to stand there so long.
d. ? Just consider the loyalty of John to stand there so long.
e. Just consider the loyalty of his uncle to stand there so long.
f. Just consider the loyalty of his friend to stand there so long.
g. Just consider the loyalty of the carpenter to stand there so long.
h. Just consider the loyalty of the city.
i. Just consider the loyalty of love.

Here, there is no cut-off point for the prenominal possessive, though the very bottom does sound quite unnatural. In the postnominal possessive, third person pronouns form the cut-off point.

The last two cases represent extremes: cases in which the cut-off point is set unusually high or unusually low. Most possessives follow yet a third pattern--that demonstrated below.

(18) a. My cars are always top quality.
b. Your cars are always top quality.
c. His cars are always top quality.
d. John's cars are always top quality.
e. His uncle's cars are always top quality.
f. His friend's cars are always top quality.
g. The salesman's cars are always top quality.
h. ? The factory's cars are always top quality.
i. * The used car lot's cars are always top quality.
j. * Japanese craftsmanship's cars are always top quality.

(19) a. * The cars of me are always top quality.
b. * The cars of you are always top quality.
c. * The cars of him are always top quality.
d. * The cars of John are always top quality.
e. * The cars of his uncle are always top quality.
f. * The cars of his friend are always top quality.
g. ? The cars of the salesman are always top quality. (cf. the cars of this salesman ...)
h. ? The cars of the factory are always top quality.
i. ? The cars of the used car lot are always top quality.
j. The cars of Japanese craftsmanship are always top quality.

In this case, the cut-off points are nearer the middle of the hierarchy. Concrete inanimate NPs form the cut-off point for the prenominal possessive, and animate lexical NPs form the cut-off point for the postnominal possessive. This is the most common pattern, one displayed by words for humans, animals, and physically discrete objects.

Before we proceed, it is necessary to note an important fact about the acceptability judgements given above. There appears to be significant variation from speaker to speaker. However, the variation is orderly: individual speakers may set the cut-off points slightly higher or lower than I have indicated. For example, many speakers find sentences like (18h) or (19g) unacceptable. This kind of variation actually strengthens my thesis, since it confirms the role that the Silverstein hierarchy plays.

The data we have just examined are quite orderly--and unexpected. After all, why should the Silverstein hierarchy be connected to English possessive constructions? Why should the prenominal possessive correlate with the top of the hierarchy, and the postnominal possessive correlate with the bottom? And why should different types of possession set different cut-off points? Such facts demand explanation.

To answer these questions, we must momentarily divert our attention to the discourse function of the English possessive constructions: to be specific, the notions of topic and focus. Let me define what I mean by these terms, since they are often subject to some confusion and various similar or equivalent terms have been employed (theme/rheme; topic/comment; etc.) A NP is topical to the extent that is central but backgrounded in discourse. The topic tends to be what the discourse is about; it most often occurs in subject position in a sentence; chains of anaphors often form in which each anaphor refers to the topic; and the topic often expresses old information. The focus represents information about the topic. It typically occurs later in the sentence, and seldom in subject position, and it is foregrounded, often because it represents new (or noteworthy) information about the topic.

My analysis depends upon one crucial claim: that the prenominal and postnominal possessive differ in their assignment of discourse function. The following chart summarizes this difference between the two possessive constructions.

	Possessor	Possessed Noun
Prenominal Possessive	Relatively topical	Relatively in focus
Postnominal Possessive	Relatively in focus	Relatively topical

This assignment of discourse function is compatible with the general properties of topic and focus, since in both constructions the first element functions as topic, or theme, and the second as focus, or rheme (cf. Firbas 1964).

There is considerable evidence for this analysis. Riddle (1984) reports that in a corpus which contained 1182 possessives, virtually every case fits. Prenominal possessives occur in constructions where the possessor was topical; postnominal possessives, in constructions where the possessed noun was topical. Riddle presents several minimal pairs in which the contrast in topicality is very clear. Consider the following example of Riddle's:

(20) a. (Public Poster): A meeting of Overeaters Anonymous will take place at the home of Agnes Levy, 184 Elm St., on . . .

b. (Public Poster): ??A meeting of Overeaters Anonymous will take place at Agnes Levy's home, 184 Elm St., on . . .

On a public poster, only (20a) makes sense. The reason is quite simple. Readers of a public poster cannot be expected to know who Agnes Levy is: it represents new information, and is clearly in focus. (20a) is therefore the natural choice. (20b) is inappropriate on a public poster because it treats the possessor as topical information, and hence presupposes that the audience will know who Agnes Levy is. Not surprisingly, if we reverse the situation, the acceptability of the two constructions is also reversed. Riddle cites the following example:

(21) What: A Birthday Party
Who: For Amy Lindsey
When: 2:00 on Saturday afternoon
Where: Amy's house
(from an actual invitation)

Here, the 'Amy' is topical, backgrounded information by the end of the invitation; the prenominal possessive is therefore natural. The postnominal construction would be entirely out of the question, due to contradictory topic assignments. Another of Riddle's examples illustrates the topical nature of the prenominal possessive. Consider (22):

(22) Susan: How are you doing with your rental properties?
Jane: Oh, pretty good. I've got the shop all fixed up now, but several of the house's windows still need to be replaced.

Here, of course, house is topical since it instantiates the general topic of discussion (rental properties). To employ the postnominal possessive would change the meaning. In (23), for

example, there must be some special reason that we should have to emphasize the house; perhaps it should have been in good shape. And this, of course, follows from the fact that the postnominal construction foregrounds the house rather than the windows.

(23) Susan: How are you doing with your rental properties?
Jane: Oh, pretty good. I've got the shop all fixed up now, but several of the windows of the house still need to be replaced.

I submit that this difference between the two possessive constructions is the primary difference between them. The other differences are direct consequences of this fact. The Silverstein hierarchy plays a role because it is actually a hierarchy of markedness as topic.[1] The top of the hierarchy contains those NPs that are intrinsically topical and which therefore appear naturally as prenominal possessors. The bottom of the hierarchy contains those NPs that are marked as topic, and which therefore occur most naturally as postnominal possessors.

Let us begin at the top of the hierarchy. It consists exclusively of indexical elements--pronouns, anaphors, and demonstratives. These are elements whose reference is automatically determined within the situation of speaking. This automatically renders them topical, and backgrounded, since the speaker can take for granted that his addressee can determine their reference. Furthermore, the hierarchy is organized according to the salience of the referent within the context of speaking. The speaker and his addressee are obviously most salient: next come anaphoric elements, which are salient without the speaker having to point them out: then come demonstratives, which are salient once the speaker singles them out: and then come potentially indexical NPs such as kin terms. Below the indexicals we find a similar arrangement. Animates are inherently probable topics, simply because people's attention is naturally drawn to them; movable concrete objects are next most likely to be attended to, and so forth. The bottom of the hierarchy consists of those things that are too abstract to be particularly salient, and which therefore are most unlikely to be taken as topic. The more salient the referent is likely to be within the situation of speaking, and the more tightly the NP's reference is determined by the situation of speaking, the higher it will be on the Silverstein hierarchy, and the likelier that it will be construed as topical in the absence of indications to the contrary.

If we interpret the Silverstein hierarchy as a hierarchy of markedness as topic, everything falls into place. Consider phrases like the following:

(24) a. my foot
b. * the foot of me

In (24a), the pronoun is a prenominal possessor. It ought

therefore to be topical. It is also at the top of the Silverstein hierarchy, which indicates, again, that it ought to be topical. Since the two indications of topicality agree, (24a) is entirely natural. On the other hand, in (24b), the situation is altogether different. Position indicates that the pronoun is in focus: but it is inherently topical. This contradiction renders the phrase unacceptable. Similarly with phrases like the following:

(25) a. * victory's monument
b. the monument of victory

The possessor NP, victory is at the very bottom of the Silverstein hierarch, which means that it is inherently nontopical, or in focus. This is incompatible with the topical status that the prenominal possessive assigns it in (25a), but fits easily with the focal status assigned it by the postnominal possessive in (25b). Finally, with possessors from the middle of the hierarchy, either construction is possible, depending on the topic-focus structure of discourse.

We have now answered two of the three questions we raised above. We know why the Silverstein hierarchy is connected with the English possessive constructions and we know why the two constructions are aligned with opposite ends of the Silverstein hierarchy. One question remains unanswered: why different types of possession have different cut-off points. The Silverstein Hierarchy provides an answer to this question also.

Consider (14)-(15) once again. If the possessed noun is a proper name, the cut-off points are set unusually high for prenominal possessives, and unusually low for postnominal possessives. On the other hand, if the possessed noun is an abstract noun, the cut-off point is set unusually low for prenominal, and unusually high for postnominal, possessives. Most nouns fall in between these two extremes. If we examine the Silverstein hierarchy, we find that the Silverstein hierarchy is once more at work, for proper names are high on the hierarchy, abstract nouns are low on the hierarchy, and most nouns fall somewhere in between. And our explanation will be the same as before: an interaction of the Silverstein hierarchy with the topic-focus assignments of the two possessive constructions. The prenominal possessive requires that the possessor be more topical than the possessed noun. If the possessor is higher on the Silverstein hierarchy than the possessed noun, no conflict will arise: but if it is significantly lower, the topic-focus assignment will be contradictory. In the postnominal possessive, the possessor must be less topical than the possessed noun. It follows that the possessor ought to be lower on hierarchy than the possessed noun.

Let us consider the consequences that this has. If a noun is high on the Silverstein hierarchy, most other nouns will be significantly lower than it. This will raise the cut-off point for the prenominal possessive, and lower it for the postnominal

possessive. On the other hand, if a noun is low on the hierarchy, most nouns will be significantly higher on it. This will lower the cut-off point for the prenominal possessive, and raise it for the postnominal possessive. In fact, we can define the cut-off point as that point at which the possessor and the possessed noun are so far apart on the Silverstein hierarchy as to violate the topic-focus properties of the construction.

A number of interesting consequences emerge from this analysis. The first has to do with the two English possessive constructions. I have pointed out that the two constructions differ in many ways other than I have discussed so far. Most of those can be attributed to their topic-focus properties. The postnominal possessive is more acceptable with indefinite and generic possessors--and these are inherently less topical than definite, specific possessors. The postnominal possessive is better with long, complex possessors: and long, complex phrases are likely to be 'comments', presenting new information or placing old information in focus. The postnominal possessive is better if the possessor is contrastive: and this, once again, is a matter of focus. Thus, many properties of English possessives derive from their behavior with respect to topicality.

The second consequence has to do with the Silverstein hierarchy. I have argued that it is a hierarchy of markedness as topic. If so, other applications of the hierarchy ought to be explicable in discourse-functional terms. In particular, we may ask why split ergative languages behave the way they do. Why do NPs at the top of the hierarchy seem to prefer nominative/accusative case marking? And why do NPs at the bottom of the hierarchy go better with absolutive/ergative case marking? Dryer (1987) has suggested a hypothesis which we can exploit.

Dryer points out that if a language has nominative/accusative case marking, it treats two NP types in the same way: the subjects of intransitive sentences and the subjects (usually agents and experiencers) of transitive sentences. And these are normally the most topical NPs in the clause. Hence, nominative-accusative case marking especially marks inherently topical NPs. On the other hand, absolutive/ergative case marking groups the subjects of intransitive sentences with the objects of transitive sentences. These NPs typically have the thematic role of <u>theme</u>, and not <u>agent</u> or <u>experiencer</u>. Some intransitive sentences do assign their subjects the role <u>agent</u>, but they also assign them the role <u>theme</u>. Thus, the ergative case specially marks the role of <u>theme</u>. This is Dryer's hypothesis. Let us consider its consequences. If nominative-accusative case marking specially marks the most topical NP, we may expect NPs high on the hierarchy to follow the nominative/accusative pattern: they are inherently topical, and hence must be marked for topicality if any nouns are so marked. If absolutive/ergative case marking specially marks the role of <u>theme</u>, similar consequences follow for the bottom of the hierarchy. The bottom of the hierarchy consists of abstract

words and words for places, times, locations, and the like. Such words typically take the role of theme (or source and goal, which are also associated with 'absolutive' argument positions). They do not normally take on agent or experiencer roles, which would take on ergative case. Hence, if any NPs are marked for the role of theme, it should be NPs from the bottom of the hierarchy, which are inherently associated with that type of role.

To sum up: the Silverstein hierarchy is a hierarchy of NP markedness as topic. For that reason, it has implications for phenomena that interact with topicality, including such diverse phenomena as split case marking and the behavior of the English Possessive constructions.

FOOTNOTES

1. Silverstein (1981) makes essentially this point, though in different terms.

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WHY EPISTEMIC AND MANNER MODIFICATION ARE EXCEPTIONAL

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1. Introduction.

In the last twenty years or so, enough research has been done on English adverbs to see that there is a clear and systematic distinction between sentential adverbs and predicate-modifying adverbs. In (1), for instance, appropriately takes the sentence in its scope in (a) but modifies the predicate handle Jay's lawsuit in (b):

(1) a. Appropriately, Carol handled Jay's lawsuit (since she was his best friend).
b. Carol handled Jay's lawsuit appropriately (doing everything as it should be done).

The two sentences have different truth conditions: for example, (1a) might be true even though Carol did many inappropriate things during the course of the suit, in which case (1b) would be false.

The pattern seen in (1) repeats itself with a wide range of adverb subtypes:

(2) a. Stupidly, the spy answered the question.
b. The spy answered the question stupidly.
(3) a. Absent-mindedly, Pat swam out to the island (forgetting that she had a dentist appointment at 4).
b. Pat swam out to the island absent-mindedly (not even noticing the $100 bills floating on the surface).
(4) a. Surgically, this procedure is not at all difficult.
b. The doctors cured him surgically, instead of using chemotherapy.
(5) a. Likewise, the Social-Democrats will have to retrench.
b. Ken did likewise.

In each of (2)-(5), the first sentence has a sentential reading of the adverb, while in (b) the adverb is a predicate modifier. In general, sentential adverbs occur to the left of the main verb, especially in initial position with 'comma-intonation', although they also often occur on either side of an auxiliary verb if one is present. Predicate modifiers may occur either to the immediate left of the main verb (although in this position they represent backgrounded information) or inside the VP--that is, to the right of the verb with no 'comma intonation'. (Sentential adverbs may also occur postverbally, but here they

almost always require 'comma intonation'.) Syntactically, then, it is easy to justify putting predicate modifiers into VP, and to consider sentential adverbs to be daughters of S (or, depending on one's analysis of auxiliaries, daughters of nodes higher than the lowest VP).

Despite the systematic nature of the paired readings shown in (1)-(5), there are two classes of adverbs which do not show this pattern, namely Epistemic and (pure) Manner adverbs:

(6) a. Undoubtedly, the contest is rigged.
b. *The contest is rigged undoubtedly.
(7) a. *Loudly, you must blow the trumpet.
b. You must blow the trumpet loudly.

In this paper I wish to show that these asymmetries can be explained on the basis of the lexical semantics of these words, and therefore that the dual pattern of sentential and predicate modification is the unmarked value of semantic composition for adverbs of this general type--that is, that Epistemic and Manner modification are motivated exceptions to the overall pattern, and need not be arbitrarily stipulated as exceptions.

2. The Compositional Semantics of 'Quality' Adverbs.

When I say that Manner modification in exceptional, it must be understood that I am referring to a much smaller class of adverbs than is usually included in the label 'Manner'. As demonstrated in Ernst (1984), the class of Manner adverbs, as traditionally conceived, is not a coherent lexical class--instead, it is a collection of predicate-modifying readings from a large number of diverse lexical classes. Thus in (1)-(5), the (b) sentences are not members of a lexically-marked Manner class, as many writers (e.g. Jackendoff 1972, Quirk et al. 1972) would state. The lexical class will be the same in each pair of sentences; the perceived manner reading of the (b) case is created through the interaction of the word's semantics and the rule combining it with the predicate.

Let us take (1) as an example. I assume that appropriately is represented as in (8), with an essentially adjectival semantics:

(8) λn (APPROPRIATE (n))[1]

I also adopt a Davidsonian approach, following Parsons' 1985 adaptation where 'eventualities' (symbolized 'e') includes all of events, states, and processes, and not just events as in Davidson 1967 (see also LePore and McLaughlin 1985 and references therein). Thus (1a) can be represented as in (9):

(9) $\exists e$ [E(e, HANDLE (c, j)) & APPROPRIATE (e)]

'E' symbolizes 'is an eventuality of'. (9) states that there is an event of Carol handling Jay's lawsuit, and that this event was appropriate (in that context).

Crucial to the present account is the following rule for predicate-modifying adverbs (henceforth 'PM Rule'):

(10) Predicate Modification Rule (informal version):
For any adverb modifying a predicate β, there is an entity g which is a property of/aspect of/'something about' the eventuality of β-ing (by the subject) such that ADV (g).[2]

Given this rule, (1b) can be represented as shown in (11), where the PM Rule specifies that g is some property of Carol's handling Jay's lawsuit:

(11) HANDLE (c, j) & ($\exists$g) APPROPRIATE (g)

Thus it is something <u>about</u> Carol's handling the lawsuit, rather than her doing it <u>per se</u>, that is appropriate.

This mechanism allows the correct interpretation of the other pairs as well. Agent-Oriented adverbs like <u>stupidly</u>, <u>wisely</u>, <u>cleverly</u>, <u>rudely</u>, and so on may be characterized by the template shown in (12):

(12) n is such as to justify judging Agent as ADJ in relation to n, where the Agent could have avoided n.[3]

Representing (12) schematically as λn (ADJ (x, n)), where x will stand for the agent, (2a-b) come out as follows:

(13) a. $\exists$e [E (e, ANSWER (s, q)] & STUPID (s, e)]
b. ANSWER (s, q) & ($\exists$g) STUPID (s, g)

(Once again, I am omitting the technical machinery which identifies g as a property or 'manner' of the spy's answering the question.)

Once we have a generally applicable predicate modification rule like (10) and have correctly formulated senses for the adverbs involved in this dual pattern of S- and predicate-modification, it is then possible to state the generalization in (14):

(14) The unmarked value for Quality adverbs is to combine either with sentences or predicates.

Speaking very roughly, Quality adverbs are those which express the speaker's judgment on some qualitative scale--as opposed to

time, place, degree ('Quantity' adverbs) or more functional, 'logical' adverbs such as even and only.[4] I cannot pretend to give a more rigorous definition of 'Quality adverb' at this point, although the idea should be intuitively clear.

It is now possible to see why the traditionally-conceived class of Manner adverbs is not parallel to classes like Evaluative, Agent-Oriented, or Domain adverbs (as in (1), (2), and (4), respectively). These and the others shown in (1-5) are defined by lexicosemantic features, irrepective of their combinatory possibilities. When they modify predicates, the PM Rule provides a manner reading. It will be important to bear in mind that manner readings are the result of this rule--not of a lexical specification per se. What remains in the (new) Manner class is the group of adverbs which only have a manner reading, and no sentential reading. Part of the goal of this paper is to explain why this restriction to just manner readings exists.

An important aspect of the semantics of Quality adverbs is that most of them are gradable, as shown by the possibility of such modifiers as very and quite in (15):

(15) a. Quite intelligently, he refrained from committing himself.
b. Egbert was behaving very oddly.

I assume here what is perhaps the standard analysis of adjectival semantics, where the individual in question is mapped onto a scale of intelligence, oddness, rudeness, stupidity, appropriateness, or whatever is expressed by the adverb root. It will be mapped in relation to a contextual norm (henceforth cn) for the type of individual in question (cf., among others, Bierwisch 1971, Lehrer and Lehrer 1982). That is, in an expression like (16), this room is mapped on a scale of messiness above the cn (of messiness) for rooms:

(16) This is a messy room.

Of course, the cn is contextual in the sense that its precise value will be affected by what we know about the room, its occupant, and other contextual factors--for example, if an eight-year-old lives there the cn will probably be somewhat higher than if the room is in a military barracks.

In the case of adverbial modification, the cn will be determined in rather different ways for the two combinational possibilities. Let us examine (1a)-(2a) again:

(1) a. Appropriately, Carol handled Jay's lawsuit (since she was his best friend).
(2) a. Stupidly, the spy answered the question.

As noted above, for (1a) the argument of appropriately is Carol's handling Jay's lawsuit. Ontologically this is an eventuality (state of affairs), and the cn will be established for all such possible eventualities in the context. Similarly, in (2a) the spy is judged to be stupid because, of all the things he could have done, he answered the question.

By contrast, for predicate modification the adverb's argument is a property of a particular type of eventuality:

(1) b. Carol handled Jay's lawsuit appropriately (doing everything as it should be done).
(2) b. The spy answered the question stupidly.

In (1b) (cf. (11)), what is mapped onto the scale of appropriateness is a 'way' of handling Jay's lawsuit, and this property g is higher on the scale than the cn for such 'ways' (i.e. ways of handling Jay's lawsuit). (2b) works similarly (cf. (13b)): the way in which the spy answered is asserted to be better than average (i.e. the cn) justification for calling the spy stupid, considering other ways in which the question could have been answered. The type of eventuality defined by the predicate is thus the major restriction on the cn for predicate modification cases.[5]

3. Epistemic and Manner Modification.

We are now in a position to see why there are two classes of exceptions to the general pattern for Quality adverbs.

Epistemic adverbs include probably, possibly, obviously, evidently, definitely, perhaps, undoubtedly, and a number of others, as exemplified in (17)-(19):

(17) She probably did it.
(18) We're definitely going to be out of town when Reagan comes to give his speech.
(19) Undoubtedly, this is the worst wurst I've tasted.

Contrary to the model-theoretic tradition, I take such adverbs to be predicates representing the speaker's epistemic judgment as to whether (or to what degree) the argument obtains, i.e. in (17)-(19) the degree of truth that the speaker ascribes to the sentence without the adverb. There may be additional nuances besides this core, of course; for example, obviously and clearly emphasize the ease with which one can perceive that the state of affairs obtains.

To take one example of a sentential reading, (20) represents (17):

(20) PROBABLE ∃e [E (e, DO (she, it))] [6]

This indicates that it is probable that there is such an eventuality as her doing it.

As mentioned above, Epistemic adverbs do not occur in positions where they could have a predicate-modifying reading:

(21) *She did it probably.
(22) *We're going to be out of town definitely when Reagan comes to give his speech.
(23) *This is the worst wurst (I've ever tasted) undoubtedly.

Given the mechanisms proposed here, the explanation for the lack of this reading is straightforward. To take (21) as an example, a predicate-modifying reading would have to look like (24):

(24) ∃e [E(e, DO (she, it)) & (∃g) PROBABLE (g)]

(As above, I omit the specification of g as a property of e.) Immediately we can see that (24) embodies a contradiction; it claims that g exists, yet PROBABLE (g) states that it is only probable that g exists. This would not be a contradiction if PROBABLE were taken as a standard modal-logic operator, but it is if PROBABLE represents a speaker's epistemic judgment. With the very act of using a predicate modifier, the speaker commits himself to the existence of some (relevant) property of the action, process, or state (etc.) represented by the predicate. Epistemic adverbs, by the Maxim of Quantity, will not be used unless there is some reason to doubt that their argument in fact obtains. Therefore the use of Epistemics as predicate modifiers is a violation of the Maxim of Quality: it is like saying 'It exists but I'm not sure it exists.'

The revised class of Manner adverbs contains such items as loudly, deftly, brightly, painfully, and smoothly. They do not occur with sentential readings:

(25) *Loudly, you must blow the trumpet.
(26) *The sun brightly had been shining that morning.
(27) *Everything smoothly was running.

(I have avoided sentence-initial position in (26)-(27) because predicate adverbs may sometimes occur there for emphasis or contrast.) In each of (25)-(27) the adverb would be acceptable inside the VP; in that case they would perform the normal predicate-modifying function of describing a property of the act of blowing a trumpet (loud), shining (bright), etc., acting essentially as restrictive modifiers.[7]

Semantically, it is difficult (if not impossible) to imagine how these could be sentential modifiers. The reason for this lies in the gradable, adjectival semantics sketched above.

Recall that the argument of the adjectival predicate is mapped on the scale representing degrees of ADJ-ness, onto a position (in the unmarked case) above the cn for entities of the appropriate type. For predicate modification, the cn is determined for properties ('ways') of the type of eventuality denoted by the predicate. Thus in (28), this particular way of blowing a trumpet has a higher sound volume than is the norm for people blowing trumpets (modulo contextual factors, as always):

(28) You must blow the trumpet loudly.

We can think of the cn as determined by a survey of all such possible acts of trumpet-blowing, where each act is checked for volume level, and some sort of average computed. To take another example, in (29) the way the sun was shining is plotted on a scale of light intensity, and interpreted in relation to a cn computed across the set of instances of the sun shining, each of which has some level of light intensity:

(29) The sun had been shining brightly that morning.

In contrast to predicate modification, sentential adverbs involve mapping the eventuality denoted by the sentence onto a scale where the cn is determined for all possible eventualities in that context. To take (1a) again,

(1) a. Appropriately, Carol handled Jay's lawsuit (since she was his best friend).

Carol's-handling-Jay's-lawsuit is implicitly compared to anything else that could have happened in that context: nobody taking the lawsuit, Carol doing an entirely different Law School assignment, etc. The only restrictions are contextual, in this case imposed by the previously-established topic (presumably Jay's lawsuit, or what Carol was to do).

Suppose an adverb like loudly or brightly were to be forced into sentential modification. It would 'try' to map an eventuality like Carol's-handling-Jay's-lawsuit onto a scale of sound volume or light intensity. Let us even assume the best case, where we could say that this handling of the lawsuit was loud. How can a cn be computed? Given sentential modification, it must be determined by surveying all possible eventualities in context--but few of these, if any, will have anything to do with sound or light. Imagine, for example, that we were to say (30) instead of (1a), in a context where Carol's choice of action is the topic:

(30) Appropriately, Carol waited three days before deciding.

There is no possibility of judging light or sound level here. And there will be an infinite number of such possibilities; therefore, it will be impossible to compute a cn, and manner modification is ruled out.

It is no accident that true Manner adverbs--for the most part, those Quality adverbs with only a predicate-modifying reading[8]--usually involve perceptual qualities: light, sound, taste, physical action, and so on. These are the ones whose selectional restrictions can only be satisfied by eventualities of a certain type, i.e. those denoted by predicates involving these perceptions. While other Quality adverbs, such as cleverly or oddly, 'select' in their own way (for example, Agent-Oriented adverbs like cleverly require an intentional agent; oddly requires a set of expectations of the norm) these restrictions can be satisfied irrespective of the predicate. Therefore they potentially participate in sentential modification; inherently Manner adverbs do not.

4. Conclusion.

Above I have sketched an analysis of a large class of adverbs in English--'Quality adverbs'--in which it is not necessary to consider a pair of sentential and predicate-modifying occurrences to be 'homonyms'. Rather, they can be represented as two readings of one lexical item. The predicate-modifying reading is a result of both the adverb's lexical meaning and the rule which combines it with the predicate.

This system has two important implications. First, it becomes possible to say that this class is lexically unspecified for sentential versus predicate modification (or, in a formal semantics where all compositional possibilities must be specified, that in the unmarked case they are specified for both). Second, it can now be seen that the (lexical) class of Manner adverbs is much smaller than has been presumed, and that once so restricted, has the peculiar property of being exclusively made up of predicate modifiers.

Finally, this brings us to the main conclusion, which is an attempt to answer the question why these Manner adverbs--and Epistemics, which have the complementary restriction to sentential modification--depart from the general pattern of Quality adverbs. The answer is not that there is some arbitrary marking for this behavior, but that the fundamental meaning of the adverbs in these subclasses makes them incompatible with one of the two compositional options:

(31) a. Epistemic adverbs reflect the speaker's judgement about the certainty of something obtaining, and by pragmatic principles are only used when there might be reason to doubt this certainty. Thus

they can serve no communicative purpose in predicate modification, where what would be their argument is already logically entailed, removing all possible doubt about its existence.

b. Manner adverbs are those which represent a quality specifically linked to a certain type of predicate (e.g. those involving sound, movement, etc.). Since their adjectival semantics requires plotting a cn for eventualities of this type only, it is impossible for them to partake of sentential modification because here all types of eventuality are possible, so the cn cannot be computed.

This being the case, it can now be seen that the system of Quality adverbs in English makes no systematic, arbitrary specifications about the kind of modification possible for individual lexical items. It has compositional rules for both sentential and predicate modification, and it is only an incompatibility between individual word-meanings and the requirements of these rules that sets Manner and Epistemic adverbs apart as exceptional.

NOTES

[1]In instances where the English adverb and its morphologically related adjective differ in meaning (cf. Bowers 1975), I take the adjectival form in a representation like (8) to include the aspects of meaning associated with the adverb.

[2]The PM Rule is formalized as follows:

(i) Predicate Modification Rule:
For any Quality adverb α and predicate β, $\alpha'\beta' =$
$\lambda x [\exists z [W_{\beta}(x)(z) \ \& \ \alpha'(z)]]$,
where $W_{\beta} = \lambda r \lambda w [(\exists g)(\exists v)(\exists e)[\beta^{*} (e,v) \ \& \ g(e) \ \& \ w=g \ \& \ v=r]]$
and β^{*} = 'is an eventuality of β-ing by'

See Ernst 1986 for further explanation and discussion.

[3]A number of desirable results fall out from this template, including being able to predict 'faking' readings such as that in (i) below, and avoiding certain difficulties inherent in other approaches to adverbial semantics, e.g. McConnell-Ginet 1982. See Ernst 1986 for detail.

(i) Stupidly, Alice answered the question intelligently, and blew her cover as an inmate of the insane asylum.

[4]In semantic terms, the class of Quality adverbs corresponds approximately to what Greenbaum 1969 calls 'Attitudinal disjuncts', although his method of classification, of course, restricts them to the sentential cases ('disjuncts').

[5]Although I have adopted a 'scalar' analysis of gradable adjectival semantics, one could also use an approach like that of Klein 1980. What is described here as a 'restriction on the cn' has roughly the same function as Klein's 'comparison class'.

[6]Note that in contrast to (9) and (13a), where the sentential adverbs appropriately and stupidly occur within the scope of the existential quantifier which introduces the eventuality-variable e, Epistemic adverbs have wide scope with respect to the quantifier. This means that adverbs of this class will be combined with sentences via a different rule from appropriately and stupidly. In fact, there will have to be a number of slightly different rules for sentential adverbs, which are part of the motivation for having separate lexical classes. However, this does not affect the present analysis, since adverbs from all of these classes will equally undergo the PM Rule when combining with predicates, where their specification for a particular rule of sentential modification is irrelevant.

[7]McConnell-Ginet 1982 presents an illuminating discussion of this aspect of predicate modification, where--parallel to nominal objects--adverbs genuinely 'modify' or further specify the predicate, carving out a subset of the acts/processes/states denoted by that predicate. Although I reject McConnell-Ginet's formal treatment of adverbs, her rule for 'VP-internal adverbial modification' (58) (p. 169) captures essentially the same notion that my PM Rule (10) is designed to.

[8]I take Manner adverbs as excluding the very small number of adverbs such as differently and well which have only a predicate-modifying reading, but whose semantics clearly marks them as being in one of the other classes. Such adverbs are simply exceptional cases of Exocomparatives, Evaluatives, or whatever, arbitrarily marked to exclude them from combination with sentences.

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Tone and Accent, and Getting the Two Together

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1. Introduction

It is not a particularly controversial claim that English has an accentual system, though precisely what such a claim means is certainly open to dispute. If one works within the framework of metrical theory, then just how to pick out one characteristic of the system as making it "accentual" is far from obvious. I would like to do just that, though: I would like to pursue the (admittedly somewhat fluid) notion that **an accentual system is one which uses the top row of the metrical grid to assign tone, and furthermore that the tone assignment that it accomplishes is autosegmental in character.**

In some earlier papers on Bantu tone systems (especially Goldsmith (1982, 1984, and the introduction to Clements and Goldsmith (1984)), work that developed ideas of James McCawley's (McCawley 1978), I pursued the idea that tone languages could be derived (derivationally) from a deeper level at which the relevant information was not present on a separate tonal tier. Instead, we posited an "accent", represented as an asterisk, which was present in the linear string, rather than being on a separate autosegmental tier. It differed from a familiar feature primarily in that it tended to move around, hopping to the left or right under various circumstances.

My main goal in this brief paper is not to discuss English or languages like it, but rather to discuss a language that has the pedigree and the patrimony of a thoroughly classical tone language, yet which apparently assigns its tones through a system of accent placement that looks surprisingly like the systems of accent placement that we are familiar with from the stress languages described in the literature. This language is Kintandu, from the Kikongo group. One of the main points that I will try to make is that the notion of "extrametrical" is involved in the description of Kintandu, and you can't have an extrametrical syllable without the notion of metrical structure being involved. In particular, I will try to show that the it is the notion "extrametrical" that is involved and not the closely related notion of

"extratonal" which we would probably have expected in the analysis of a straightforward tone language. If this is correct, then the accent systems posited for tonal systems will take a major step towards reducing (in Clements' neat phrase) to "degenerate grids".

After discussing some of the details of the nominal system of Kintandu, I will conclude by considering just how far we might want to pursue these parallels. What is it that makes us think that Kintandu is not just a stress system? What makes us think English is not just a tone language?

2. Introduction.

Recent work on Bantu tone has for the most part shied away from tackling the analysis of tone systems of the group of languages generally referred to as KiKongo, or of any of the languages closely related to it. [1] Perhaps with good reason; analysts working on such languages as Kintandu are quite explicit in noting how different their tone systems seem to be from the better understood eastern Bantu tone systems, the kind of tone systems discussed, for example, in Clements and Goldsmith (1984).

In systems such as these, such as that found in Kintandu, two characteristics stand out. First, there is a good deal of tonal variation in the noun (and also the verb) governed, directly or indirectly, by the grammatical role played by the noun or by the grammatical role played by the sentence in which the verb appears. Second, within the noun or the verb category, there are several underlying "tonal"b categories (three, four, or more such categories), but these are not categories in the sense familiar from recent studies in eastern Bantu languages. These "Groups" cannot be felicitously identified with an underlying tonal melody, or even as a sequence of underlying accents. Rather, the main parameters of variation across what is allowed as underlying specification seems to be (i) whether the final syllable will bear a tone or not: (ii) whether there is an underlying High tone or not; and (iii) whether this High tone associates with the first or the last vowel of the stem. These characteristics are quite different from the patterns expected from eastern Bantu languages. While one can describe these facts using autosegmental notation, the description ends up

being, in a sense, a series of excuses for why this systems is different from Eastern Bantu systems. We need something better than that.

3. Kintandu

Daeleman (1983) presents a sketch of Kintandu, in the KiKingo group, which meets this general description. According to Daeleman, there are four Tone Groups of nouns, and four Tonal Cases in which these nouns can appear. The surface tone of a noun from a given Tone Group varies depending on the Tonal Case that it is realized in. Each noun, that is, can appear in any of four possible tonal forms; which form is used depends on the general syntactic environment, and the environments can be divided into four, which we then call our four Tonal Cases.

Let us describe these facts in a bit more detail. There are four Tone Groups of nouns; we will begin by calling them TG 1, TG 2, TG 3, and TG 4, and every noun falls into one of these four Groups. There are four Tonal Cases, which Daeleman calls I, II, III, and IV. The first of these we may call the "Basic" case, because it is closest to the underlying form (no tones are grammatically inserted or deleted in this Tonal Case); the third we may call "defocused", because the all the tones are Low in this Tonal Case. These eight distinctions interact in the following ways.

Tonal Case I is used for subject or object NPs. When used "predicatively" in the affirmative ("it is an NP"), Tonal case II is used, and Tonal case IV is used for negative predicative uses. Tonal case III is used, according to Daeleman, for "the first unit of a phrase in subject or object function," apparently just for use in the case of an associative construction ("the X of [the] Y").

4. The Basic Tonal Case I.

In the basic Tonal Case I, TG 1 nouns are all Low-toned; we may, therefore, identify TG 1 as the class of underlyingly toneless nouns. TG 2 nouns have a High tone on the penultimate mora. (See Table 1 below. The data there gives whole words, with the noun class prefix separated by hyphen; the tone rules apply to stems, however, not to words).

At this point I would like to refer to the notions of "extratonality" and "extrametricality", notions which have been discussed in the literature for several years (a decade, in the case of the latter term). An inspection of the various forms in Table 1 shows that a High tone, if one is present, associates with either the penult or the ultimate syllable. In classical generative phonology of the SPE vintage, if the difference was not phonologically predictable, the burden of the difference would have fallen to rules being marked to apply irregularly to the individual cases. We might have established one rule to associate a High tone to the last syllable of a word, and another rule to associate a High tone to the penult; we might have tried to decide which was the marked and which the unmarked case; and then we would have assigned each lexical item to one rule or the other.

In the developments of autosegmental and metrical phonology, a major (but never made-explicit) change in analysis has lain in the effort to somehow make the phonological representations themselves more responsible for what happens to them, and less whimsically subject to the rules that are externally imposed on the underlying forms of the language. From this vantage point one can look for simple phonological rules whose effects may be made slightly more complex by the particulars of the forms to which they apply. That is the motivation for the notion of "extrametrical syllables": these are syllables which the rules of accentuation are blind to. Extratonal syllables, in quite parallel manner, are invisible as far as the tonal principles of the language are concerned. Extrametricality marking plays a major role in establishing where the grid marks on a metrical grid will fall, for initial or final syllables ("peripheral" syllables) may be marked as extrametrical. Extratonality plays a role in autosegmental analyses, where tones will fail to associate with what would seem otherwise like an otherwise inviting-looking vowel, just in case that vowel is marked as extratonal.

The natural place for a tone to associate is either the first or the last vowel of a word: this is the limiting case of the now classic observation that in tone languages, the tone melody is mapped onto the vowels either from left to right or from right to

left. In this case, the trend, we can see, is to map the High tone to the last vowel, but in TGs 2 and 3 the final syllable is sometimes immune to the tonal association. Since Kintandu has the hallmarks of an autosegmental tone language (and, indeed, does use tone autosegmentally), I will begin by assuming that this difference between the tonal groups involves marking certain word-final syllables as extratonal, and that a rule associating a tone to the "final" vowel is in order, as written in (2). I will later come back and try to show that this was the wrong approach, and that extrametricality is more appropriate; but for now, that would seem odd, and we will pursue the more straightforwardly tonal perspective.

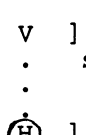
Let us say that TG 2 nouns are those that are underlyingly or lexically marked with their final syllables extratonal. We shall furthermore suggest that all toneless nouns (i.e., TG 1) have this property as well, redundantly, though the reason is not yet obvious by any means.

TG 2 nouns have a lexical High tone, and we will have to get it to associate with the last vowel. This will be accomplished by the Tone Association Rule 2, whose initial formulation is given just below. The intent of this formulation is to assign the rightmost High tone to the final vowel of the word, where the rule is blind to a word-final syllable marked extratonal. This understanding of the formalism would allow rule (2) to associate a High to a penultimate syllable when the ultima is extratonal; as I have indicated, though, we shall consider a quite different interpretation below. TG 3 nouns have a High tone, which is realized on the final mora in shorter nouns (those whose stem has one or two syllables), and on the penult in longer nouns. This is due, we shall suggest, to a rule assigning final-extratonality in certain grammatical conditions; we will call this the "Extratonal Marking Rule", given in (1). TG 4 nouns have a lexical High tone, and it is assigned to the final vowel; thus the final vowel here is not extratonal. Rule (2), it should be clear, applies after rules (1), since (1) prepares the ground for it to apply appropriately.

(1) TG 3 Extratonal Rule (lexically governed) -- for TG 3 nouns only, where "S" stands for "syllable" (stem-level rule).

S --> (S) / S S -- #

(2) Initial Tone Association Rule (first formulation):



In sum: "Basic tonal case":

Tone	Final Syllable Extratonality marking
TG 1	L (or none) Final syllable (but not obvious!)
TG 2	H Final syllable
TG 3	H Rule (1)
TG 4	H none

TG 1	TG 2	TG 3	TG 4
ma-solokoto	ki-butukúlu	ma-fwatabála	ki-tundibilá
ki-nwaaninu	ki-taanínu	ma-kaakíla	ba-teekoló
ki-menina	ma-kyeléka	ki-kalála	ki-kokilá
ma-biibi	ki-wiína	ki-tuutú	n-tuutú
ma-lafu	lu-ngwéni	ma-tutí	ma-kukú

Table 1

5. **Second Tonal Case.** In the second Tonal Case, we find patterns like the following:

Second Tonal Case

TG 1	TG 2	TG 3	TG 4
ma-solokóto	ki-bútúkúlu	ma-fwátábála	i-túndibila
ki-nwaanínu	ki-táánínu	ma-káákíla	ba-téekolo
ki-menína	ma-kyéléka	ki-kálála	ki-kókila
ma-biíba	ki-wíína	ki-túutu	n-túutu
ma-là´fu	lu-ngwéni	ma-túti	ma-kúku

Table 2

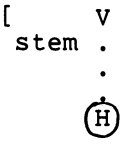
A look at TG 1 suggests that in this Tonal Case, a High tone is added to the lexical tone of the noun, since we have already posited TG 1 as being underlyingly toneless, and a High tone appears here on the penult. In addition, we see that a "plateau" or sequence of High tones is formed in TGs 2 and 3 by what we take to be a general rule specifying that all syllables are High when surrounded on the surface by High tones (of which only one can be the lexical one, given what we have suggested so far). Thus again, this Tonal Case appears to add a High tone to the lexical tone of the noun. In TG 4, a High appears on the first syllable of the stem, and not on the last, surprisingly; we shall suggest that a High tone is present on the final vowel in an intermediate stage of the derivation, and is removed by rule.

We thus posit a grammatical High tone prefix "H" which is prefixed in Tone Case II (and also Tone Case IV, as we shall see shortly).

We suggest that extratonality marking to the final vowel is assigned again lexically to TGs 1 and 2, and by rule (1) to TG 3. TG 4 **never** has its final vowel marked extratonal. Even though we do not see a High tone on the surface, the final vowel is still not extratonal here in TG 4, whose account we will return to in a moment.

We have already said that the last tone is assigned to the last (non-extratonal) vowel in the stem, and we see that any grammatical High tone is assigned to the first vowel. This second tone association is produced by rule (3). The relationship between the two tonal association rules, (2) and (3), will be discussed further below; for now, we may just say that they are extrinsically ordered, with (2) before (3), that is, we associate a High to the last vowel, and only after that try to associate a left-over High tone to the first vowel. The condition that the High be floating (as indicated by the circle around the H in (3)) ensures that it applies only to Highs that have already not been affected by rule (2).

(3) Clean-up Tone Association Rule



The four relevant cases then would work as follows:

Tonal Case 2 "Final-Extrametricality Case"
TG 1: ma-soloko(to) (lexical extratonality marking)
. (by rule (2))
.
.
H (inserted by the Tonal case)

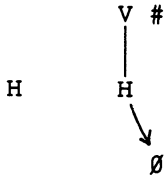
TG 2: ki-butuku(lu)
. .
. .
. .
H H (one tone lexical, one from the Tonal Case)

TG 3 nouns work just like TG 2 nouns in this Tonal Case except for nouns of the form CVVCV. Such nouns in TG 2 have a long High tone (cv́v́cv), while such nouns in TG 3 have a falling tone (cv́vcv). Consider the constrast in the following four examples:

(4)	TG 2	TG 3
Tonal Case I	ki-wiína	ki-tuutú
Tonal Case II	ki-wíína	ki-túutu

We suggest that the slight difference seen in the second row of (4) is due to the lexical tone of **ki-túutu** (TG 3) actually being placed on the final vowel, just as it is in the Tonal Case I. The lexical tone of the **ki-wíina** appears on the penult, because the final vowel is always extratonal in TG 2. We will posit a rule (5) which deletes a High tone on the final vowel if preceded by another High tone.

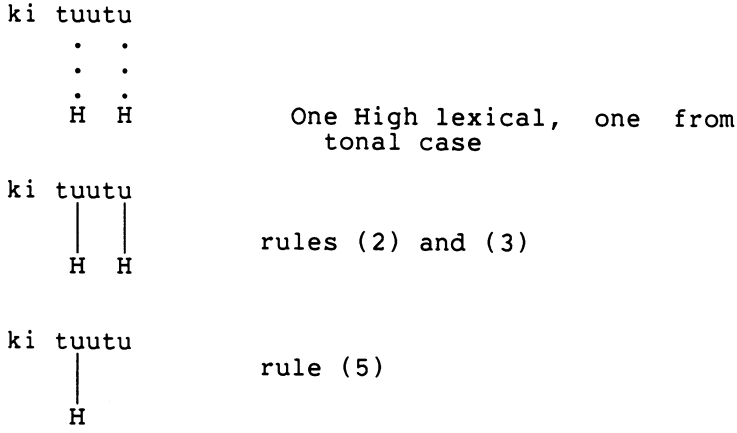
(5) Final High deletion



It will be important for us to notice that rule (5), Final High Deletion, applies only to High tones associated with the absolutely final syllable. If an extratonal syllable follows, a penult bearing a High tone will not lose that tone by rule (5). This interpretation conflicts with the one suggested above rule (2), the Initial Tone Association rule, and will be the basis below for our reinterpretation of what we have called "extratonality" as being actually extrametricality.

Given this understanding, **ki-túutu** is derived as in (6).

(6)



If we assume, as we have done, that TG 4 nouns have an underlying H, and that they get a second High in this tonal case (just as TG 2 and TG 3 nouns do), then rule (5) is exactly what we need to account for their derivation, as we see in (7).

(7) ki-túndibila

H H

by rule (5)

Ø

6. Third, or Defocused, Tonal Case. This is the simplest tonal case; all nouns are Low in tone in this case. We will not worry about its analysis.

7. Fourth Tonal Case. This Tonal Case is just like the Second Tonal Case for TGs 1 and 2, and similar to it for TGs 3 and 4.

Fourth Tonal Case

TG 1	TG 2	TG 3	TG 4
ma-solokóto	ki-bútúkúlu	ma-fwátábálá	ki-túndíbílá
ki-nwaanínu	ki-táánínu	ma-káákílá	ki-téékóló
ki-menína	ma-kyéléka	ki-kálálá	ki-kókílá
ma-biíbi	ki-wíína	ki-túútú	n-túútú
ma-là´fu	lu-ngwéni	ma-tútí	ma-kúkú

Table Three

We will suppose that a High tone prefix is added in this Tonal Case, just as with Tonal Case II. Then TG1 and TG 2 **should** work just as in Tonal Case II, and they do. TGs 3 and 4 here act differently from Tonal Case II only in that their final syllables do get a High tone. We may account for this by (i) making rule (1) not apply in Tonal Case 4, and also by making Final High Deletion (5) not applicable in Tonal Case IV.

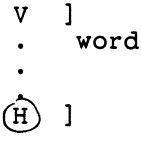
8. Some reconsiderations.

The system we have arrived at so far is not unreasonable. It consists primarily of an extratonality rule (1) and two subsequent tone association rules, (2) and (3).

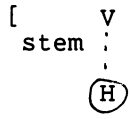
(1) Extratonal Marking Rule (lexically governed) -- defines "TG 3" nouns. Does not apply in Tonal Case 4.

S --> (S) / S S -- #

(2) Initial Tone Association Rule (first formulation):



(3) Clean-up Tone Association Rule



I would like to suggest an alternative view of the analysis presented so far in which it is not **extratonality** which is the crucial variable, but rather **extrametricality.** This perspective is motivated by three points: (i) the observation above that the "blindness" of tone rules to extratonal syllables is only partial; rule (5) must be quite aware of their presence; (ii) the desire to see rules (2) and (3) as part of a single process, that of assignment of High tone to a metrically Strong position, a point investigated in several recent papers on KiRundi and Xhosa; and (iii) the desire to view the assignment of a High either to the ultima or penult as being parallel to the assignment of metrically Strong position to one of the last two syllables.

Point (i) will follow directly if we drop the notion of extratonality from our analysis, and say rather that **accent** is assigned to either the ultima or the penult. Rule (5) will thus apply correctly. Furthermore, rules (2) and (3) can be assimilated to a general schema for association of High tones to accent syllables.

What would this general schema be? It has been suggested in many places in the literature (most fervently, perhaps, by the present writer) that an "accentual principle" exists which associates an accented tone -- let us simplify here, and say simply a High tone -- to an accented vowel. In the case of Kintandu, however, it makes most sense to say that there are two levels of accent, primary and secondary. The first-vowel of the stem always receives secondary accent, while the primary accent falls either on the ultimate or penultimate syllable of the stem. In this

way, we reinterpret the rules which marked the final syllable as "extratonal" (rules 1 and 3) now as rules marking the final syllable as extrametrical in the familiar sense. Rule (1), in particular, looks like a familiar sort of rule in this light. Using the metrical grid as the basis of our notation, we would derive a representation as in (8) for a word such as **ki-bútúkúlu**, a TG 2 word in the Second Tonal Case.

(8)

```
          x
    x     x
    x  x  x
bu tu ku (lu)
```

In the terminology of Prince (1983), both the left and right versions of the End Rule apply in (8), and the right-side version of the End Rule reapplies at the word level in (8) to give the representation found.

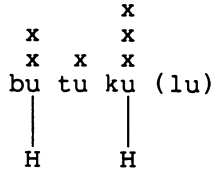
Rules (2) and (3) can then be assimilated to a single schema, which we would offer as a part of prosodic phonological theory. This schema would say that if there were a single tone, it would associate to the position with the greatest accent (the highest rank on the grid). If there is a tone left over, it associates with the next highest accent, and so forth. If this schema is stated as a well-formedness condition rather than as a set of instructions, we will not have to worry such pseudo-problems as making sure that in a case like (8), it is the right-hand High that associates first with the primary-accented vowel rather than the left-hand High.

(9) The Tone-Accent Attraction Condition

> A tone-to-grid structure is well-formed if and only if there is no tone-bearing syllable which has a lower level of accent than a toneless syllable. [Thus, if a syllable S has a tone, all syllables with a greater level of accent than S must also bear a tone.]

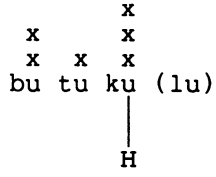
Given the Tone-Accent Attraction Condition in (9), only (10) will be permitted as a possible tonal association of two High tones with (8).

(10)



With the same grid structure, but only one High tone (as in the Basic Tonal Case I), then the only permitted structure is as in (11).

(11)



The analysis of the data from Kintandu presented thus far would reduce, then, to the following points: (i) a lexically governed extrametricality rule (1); the general condition on tone-accent relation given in (9); and the Final High Deletion rule (5), a simple tone rule.

9. KiYaka.

The following discussion of KiYaka, a language not too distantly related to Kintandu, is based on the material in van den Eynde 1968, as well as a handout prepared by van den Eynde for a 1984 presentation in Eisenstadt, Austria.

There are three Tone Groups in KiYaka, and three Tonal Cases. I shall attempt to make the assignment of numbers match up with the categorization already given for Kintandu, though the correspondence is, of course, far from perfect.

The first Tonal Case is the one that van den Eynde calls "indeterminate", as in Table 4. [TG 1 corresponds to van den Eynde's Group C; TG 2 to his Group B, and TG 3 to his Group A].

TG 1	TG 2	TG 3
m-beetukulu	ba-themuthému	yi-saambiká
ba-yakala	ma-kulúndzi	yi-sengelé
ba-ngoomba	ba-ngaandú	ma-heembó
ma-bala		ma-kalá
mu-tu		ma-tá

Table Four

We can see that TG1 has no High tone in this Tonal Case, and like the TG 1 in Kintandu, has no underlying tone. TG 2 has penultimate High, unless the stem has only two syllables. In this case, the first syllable must be long, and the High appears on the final vowel instead of the penult. (That is, there are no bisyllabic noun stems in this TG with a short first syllable, nor any monosyllabic stems.) In TG 3, the High appears on the final vowel.

If it is possible to analyze KiYaka along the lines suggested in the preceding section, then the primary accent in TG 2 is on the penult, and in TG 3 on the ultima; i.e., the final vowel in TG 2 is lexically marked as being extrametrical. Both TG 2 and TG 3 have a lexical High tone, whereas TG 1 does not.

(12) V --> (V) / -- # (minor rule, TG 2)

The second tonal case is the one that van den Eynde calls "determined", and corresponds to the third tonal case of Kintandu, in which all vowels are Low in tone. There being not much to say, we will say nothing about this nominal tonal case.

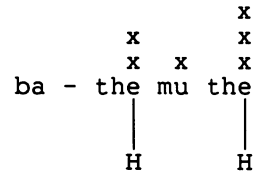
The third and final tonal case in KiYaka is the "determinant" tonal case, with such forms as the following:

TG 1	TG 2	TG 3
m-béétúkúlú	ba-thémúthému	yi-sáambika
ba-yákálá	ma-kúlúndzi	yi-séngele
ba-ngóómbá	ba-ngáándu	ma-héembo
ma-bálá		ma-kála
mú-tú		má-ta

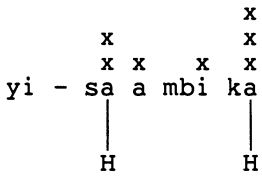
This Tonal Case clearly corresponds to the Second and Fourth Tonal Case in Kintandu, where High is imposed grammatically (a point that does not escape van den Eynde).

TGs 2 and 3 are easily derivable given the analysis set up so far for Kintandu. We will assume the same accent rules operate in these two classes as are mentioned in the analysis of example (9)-(11) above in Section 8. Thus the first and last vowel of the stem is accented in TG 3, and the first and penult are accented in TG 2:

(13) a. TG 2



b. TG 3



Tones **must** be associated as indicated in (13), given the Tone-Accent Attraction Condition suggested above. We suggests that the Final High Tone Deletion rule (5), above, is operative in KiYaka as well as in Kintandu, thus deleting the second High in 14b (TG 3), but not in 14a (TG 2).

The only form that needs to be accounted for, then, is the TG 1 form, in which the grammatically inserted High tone is assigned not to the final vowel, as it would be in Kintandu, but is, instead, spread across the entire stem.

It is not clear to this writer at this point whether it would be more appropriate to view the spreading of the High tone as the result of a language-specific tonal rule (which would be easy to write, in and of itself), or to view it as a way of maintaining tone/accent parallelism in special circumstances. This second, much more speculative, approach would suggest viewing TG 1 forms as having equal grid markings on all stem vowels (for the sake of concreteness, let us say all unaccented, as in 15). Then the modification required in the Tone-Accent Attraction Condition would be as follows, where the changes are given in square brackets: "A tone-to-grid structure is well-formed if and only if there is no tone-bearing syllable which has an [equal or] lower level of accent than a toneless syllable. (Thus, if a syllable S has a tone, all syllables with a greater [or equal] level of accent than S must also bear a tone)." The change is

minor, but expresses the idea that if there is a sequence of syllables with the same meterical prominence, one of the syllables cannot then be selected for tonal prominence.

10. Conclusion.

Limitations of space preclude any lengthy discussion of the further significance of the Tone-Accent Attraction Condition. One can see again in the present analyses the way in which yet again metrical structure, though it itself has little direct phonetic realization, serves to organize other aspects of the phonological representation.

The Kintandu and KiYaka cases are different from other Bantu languages in that the tones are underlyingly unassociated. In most Bantu languages, the tones are underlyingly linked to particular vowels (or are linked in a way that precedes and ignores the Tone-Accent Attraction Condition, perhaps because the associations precede the establishment of metrical structure). In a number of Bantu languages, however, we can see the effects of the Tone-Accent Attraction Condition in modifying or distorting the deeper associations in order to shift a High tone to an accented position. Further work will clarify the precise connections between these various types of tone and accent systems.

The two biggest differences between the use of the metrical grid by Kintandu (as opposed to its use by a more traditional accent language like English) appear to be the lack of **local** phonetic manifestations of the lowest row on the metrical grid, i.e., loudness and length. I think it is of considerable interest that any number of languages have been discussed in the metrical literature in which the lowest grid row, which normally is realized as local stress, must specifically be marked not to be so realized. (This is the case in any language where stress falls on the first heavy syllable or else the last syllable, for example, or in any language where bounded metrical feet must be established for analytic purposes, though no alternating stress is described phonetically). The general picture that emerges is that the bottom row of the metrical grid is typically realized as local stress, though this option may fail to be chosen by the language, while the top row is used to associate autosegmental tone to the skeleton.

Footnotes

1. This material is based upon work supported by the National Science Foundation under Grant No. BNS-8421245.

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Topic Constructions in Spoken French: Some Comparisons with Chichewa

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1. Introduction[1]

In this paper I will examine some topic constructions in spoken French which have been described by Lambrecht (1981), and consider them in light of some proposals for the formal analysis of topic constructions which have been made by Bresnan and Mchombo (1985) in the context of a study of Chichewa, a Bantu language spoken in Malawi.

In any topic construction, such as (1), the essential problem for formal grammar is that of how the topic constituent is integrated into the syntactic structure of its sentence.

(1) Snakes, I can't stand them.

What Bresnan and Mchombo suggest is that there is an anaphoric relation within the clause between the topic constituent 'snakes' and the pronominal object 'them', just like the anaphoric relation between those words across sentences in discourse, as in (2):

(2) My brother eats snakes for breakfast, but not me. I can't stand them.

What is special about the topic construction in (1) is that the anaphoric relation is necessary not just to the coherence of the discourse but to the grammaticality of the sentence. Within the lexical functional theory of grammar, this is expressed by distinguishing between argument functions such as subjects, objects and obliques, which are integrated directly into the syntactic argument structure by being governed by a predicator; and discourse functions, which include grammaticized topics. Discourse functions are claimed to be integrated into the syntactic argument structure in certain other specified ways, one of which -- the one which will be relevant here -- is by anaphorically binding an argument.

In English, the fronted position of the topic and the independence of the pronoun to which it is related make the resemblance of this kind of clause-internal anaphora to anaphora across clauses fairly clear. But it can be less clear in languages which differ structurally from English in these respects. For example, in a language where a topic can occur in the same linear position as an argument would, and where the pronoun to which it is bound is one which is incorporated into the predicator, sentence-internal anaphora to a topic can bear a strong resemblance to grammatical agreement, which is here taken to be a relation between an argument of a predicator and some features of it encoded on the predicator. Such a structural similarity obtains in Chichewa:

(3) a. Njuchi zinaluma alenje.
bees SM-past-bite-indic hunters
'The bees bit the hunters.'

b. Njuchi zinawaluma alenje.
bees SM-past-OM-bite-indic hunters
'The bees bit them, the hunters.'

The verb in Chichewa shows obligatory subject marking and optional object marking. On Bresnan and Mchombo's analysis, the object marker is an incorporated pronoun. A noun phrase which occurs in a sentence without an object marker as in (3a) can be an object, but one which occurs with an object marker is taken to be a topic, as in (3b). Yet superficially the two constructions look quite similar. Historically, agreement marking often derives from incorporated pronouns; and it has sometimes been suggested that it is in principle impossible to distinguish between sentence-internal anaphora and grammatical agreement (Givon 1976).

Within the framework outlined above, however, there is a major difference: a noun phrase in a grammatical agreement relation is an argument, but one in this kind of anaphoric relation is not. If the difference between argument functions and discourse functions has any validity, then, there should be syntactic grounds by which the two may be distinguished; and Bresnan and Mchombo make further explicit proposals along these lines. One such suggestion is that a noun involved in a grammatical agreement relation, since it would be participating directly in the argument structure of its sentence by being governed, might be expected to be marked for case, or to have to occur within the local domain of the predicator, while one involved in an anaphoric relation would not.

I would like to turn now to spoken French, and to some topic constructions which appear not to conform to these proposals. Certain preverbal topics need not be bound to any argument at all; and postverbal topics seem to exhibit certain properties which are claimed to be characteristic of grammatical agreement. I would like to suggest that these apparent difficulties do not undermine the anaphoric analysis, but do suggest a need to couple it with a more refined notion of the properties of different topic constructions.

2. Antitopics

French has a series of clitic pronouns which form a phonological unit with the verb.[2] While standard French is traditionally assumed to have a structure in which the distribution of noun phrases is determined primarily by their syntactic roles, as in (4),

(4) Ces Romains sont fous.
'These Romans are crazy.'

in spoken French an equally basic sentence structure consists of a verb to which clitics are attached, together with optional noun phrases which are coreferential with the clitics and whose distribution is determined primarily by discourse factors (Lambrecht 1981):

(5) a. Ces Romains, ils sont fous.
'These Romans, they are crazy.'

b. Ils sont fous, ces Romains.
'They are crazy, these Romans.'

The noun phrases which cooccur with clitics in this way can always be omitted without causing ungrammaticality, the clitics themselves being sufficient to make a clause well-formed in terms of its argument structure:

(6) a. Pierre il la voit Marie.
'Pierre, he sees her, Marie.'

b. Il la voit.
'He sees her.'

(7) a. Pierre voit Marie.
'Pierre sees Marie.'

b. *Voit.

Furthermore, such noun phrases have the essential pragmatic properties of topics: their referents are treated as being in some way recoverable from the context of the discourse and can be considered to be that about which the information in the sentence is being communicated (Reinhart 1982); they also show certain concomitant formal properties, such as having to be definite. These constructions thus lend themselves naturally to being analyzed as involving anaphoric relations between topic constituents and the clitic pronouns.

However, while topic constituents which precede the verb show the properties which would be expected on this analysis, topic constituents which follow the verb do not. Lambrecht distinguishes these postverbal topic constituents by the name 'antitopics',[3] and notes that, among other differences, antitopics appear to be marked for case and to be subject to certain locality constraints. Strikingly, similar exceptional properties appear to characterize antitopics in Chichewa.

Case. In French, grammatical functions other than subjects and objects are usually expressed by prepositional phrases. In topic constructions, when the argument to which a topic is bound is one which could be expressed as a prepositional phrase, a preverbal topic constituent will not include the preposition, but an antitopic must:

(8) a. La plage il faut y aller quand il fait chaud.
'The beach, you have to go there when its hot.'

b. Il faut y aller quand il fait chaud, à la plage.
'You have to go there when it's hot, to the beach.'

c. *Il-faut y-aller quand il-fait chaud, la plage.

The same asymmetry may be found in Chichewa. The verb in Chichewa may incorporate a locative enclitic which may either replace or cooccur with an argument expressed as a prepositional phrase. When the enclitic and the prepositional phrase cooccur, the discourse effect is that of a topic construction. In such constructions, the preposition may be eliminated from the phrase when the phrase precedes the verb, but not when it follows it:

(9) a. Nyumba iyi mwana wanu waikamo njoka.
house this child your SM-perf-put-encl snake
'Your house, this child has put a snake in it.'

b. Mwana wanu waikamo njoka mnyumba iyi.
child your SM-perf-put-encl snake in-house this
'Your child has put a snake in it, this house.'

c. *Mwana wanu waikamo njoka nyumba iyi.

This inclusion of the preposition in these antitopic constructions would of course be expected if the antitopics were not in fact related to the syntactic argument structure by anaphora, but were themselves arguments governed by the verb. However, it does not seem to pattern quite as that analysis would predict, either. For it seems that what is at stake is the representation not so much of the syntactic role of the argument as of certain semantic information. This can be seen most clearly in the behavior of antitopics related to the French oblique clitics, 'y' and 'en'. 'Y' is a pronominal equivalent to a prepositional phrase with 'à', and 'en' to one with 'de'. Now among verbs which take arguments expressed as prepositional phrases, some seem to require the preposition as a kind of syntactic case marking while others seem to require it by virtue of some semantic information it contributes to the predication (Bresnan 1980). Certain properties have been suggested to distinguish the two cases; for example, the choice of preposition tends to be invariant when the marking is principally syntactic, but not when it is semantic. Thus there is a difference between a verb like 's'interesser à', which occurs in (10), in which the marking of the oblique argument with 'à' is invariant and therefore may be said to be of the syntactic type, and one like 'aller', which occurs in (11), in which 'à' seems to contribute semantic information, as suggested by the fact that it may be replaced by other locative prepositions, depending upon the meaning: It is possible to say not only 'aller à la plage' but also 'aller chez les Dupont', 'aller vers l'eau', etc.

Now in antitopic constructions, including the preposition is preferable in both cases. But it is possible to leave it out where it functions like syntactic case marking, while it is absolutely impossible to do so where it plays a semantic role:

(10) a. Je m'y intéresse plus, moi, à cette femme.
'I'm not interested in her any more, that woman.'

b. ?Je m'y intéresse plus, moi, cette femme.

(11) a. J'y vais plus, moi, à cette plage.
'I don't go there any more, to that beach.'

b. *J'y vais plus, moi, cette plage.

Exactly the same difference arises with arguments represented by 'en'. In the verb 'se souvenir de', in (12), the marking of the oblique argument with 'de' has the properties of syntactic case marking, while with the verb 'venir', in (13), 'de' clearly contributes semantic information. Again, in antitopic constructions it is possible to omit the 'de' in the former case but never the latter:

(12) a. Je m'en souviens bien, moi, de cette nuit à Paris.
'I remember it well, that night in Paris.'

b. ?Je m'en souviens bien, moi, cette nuit à Paris.

(13) a. J'en suis venu il y a quelque jours, de Paris.
'I came from there a few days ago, Paris.'

b. *J'en suis venu il y a quelque jours, Paris.

Finally, indirect objects, which in French are marked with 'à', pattern with the syntactic cases in that it is not impossible to omit the 'à' from antitopic constructions:

(14) a. Mes parents ont donné une voiture à mon frère pour son anniversaire.
'My parents gave my brother a car for his birthday.'

b. Mes parents lui ont donne une voiture pour son anniversaire. à mon frère.
'My parents gave him a car for his birthday, my brother.'

c. ?Mes parents lui ont donné une voiture pour son anniversaire, mon frère.

Thus there is clearly an asymmetry between topics and antitopics with respect to the case-marking predictions of the anaphoric analysis, but it does not seem to derive from the antitopics' actually being arguments governed by the verb.

Locality. A similar asymmetry arises with respect to the issue of locality. In French, while a topic can be separated by one or more clauses from the argument to which it is bound, an antitopic cannot be:

(15) a. Pierre, les censeurs ont interdit tous les films qui le passionnent.
'Pierre, the censors have forbidden all the films which excite him.'

b. Les films qui le passionnent, Pierre, ils ont tous été interdits.
'The films which excite him, Pierre, have all been forbidden.'

c. *Les films qui le passionnent, ils ont tous été interdits, Pierre.

The same difference appears to obtain in Chichewa:

(16) a. Alenje asilikali a ganyu anapha njuchi zimene zinawaluma.
hunters soldiers of temporary work bees rel SM-past-OM-bite-indic
'The hunters, the mercenaries killed the bees that bit them.'

b. Njuchi zimene zinawaluma alenje zinali zaululu.
bees rel SM-past-OM-bite-indic hunters SM-past-be poisonous
'The bees that bit them, the hunters, were poisonous.'

c. *Njuchi zimene zinawaluma zinali zaululu alenje.
bees rel SM-past-OM-bite-indic SM-past-be poisonous hunters
'The bees that bit them were poisonous, the hunters.'

Again, while this constraint is not what would be expected of an anaphoric relation, it does not have quite the characteristics which would be expected of a grammatical agreement relation, either. Within the lexical functional theory of grammar, in order for a syntactic structure to be well-formed, the arguments governed by a predicator are required, except where certain conditions for control are met, to either be expressed syntactically within the phrasal structure headed by the predicator or expressed morphologically on the head itself. Under this definition, if the antitopics were actually arguments, the sentences in (17) and (18) would be expected to be bad, yet they are fine in both French and Chichewa:

(17) Les discipliner est complètement impossible, ces enfants.
'To discipline them is completely impossible, those children.'

(18) Kuwachatamitsa ndi kovuta, ana awa.
inf-OM-discipline is difficult, children those
'To discipline them is difficult, those children.'

Instead what seems to be required is that the antitopic be in the same clause as the pronoun to which it is related, as suggested by the fact that (19a) is ungrammatical for speakers who would otherwise accept (19b):

(19) a. *Pour Marie de les discipliner est complètement impossible, ces enfants.
'For Mary to discipline them is completely impossible, those children.'

b. Pour Marie de les discipliner est complètement impossible.
'For Mary to discipline them is completely impossible.'

Similar evidence comes from possessive constructions. For at least some

speakers in French, and in Chichewa, it is possible for an antitopic to be related to a possessive adjective:

(20) Leur voiture est complètement cassée, mes parents.
'Their car is completely wrecked, my parents.'

(21) Bwato wao waswekeratu wonse makolo anga.
canoe their it-perf-smash all parents my
'Their canoe is completely smashed, my parents.'

Here again, if the antitopics were actually arguments, the constraint on the locality of arguments defined above would erroneously require them to appear within the subject noun phrase, whereas all that in fact seems required is that they remain within their clause.

I do not have an explanation for these facts -- possibly they derive from more general restrictions on cataphora. The point is simply that, as with the case-marking properties of antitopics, the locality constraint to which they appear to be subject does not seem to derive from their being arguments with which the clitics might be showing grammatical agreement. In fact Lambrecht offers some suggestions for these properties of antitopics based on their pragmatic functions; and the apparent semantic character of these patterns, together with their occurrence in Chichewa, lends plausibility to this approach.

Independent and clitic pronouns. There also seems to be some positive evidence in favor of the anaphoric analysis. In addition to its clitic pronouns, French has a series of independent pronouns. It has sometimes been suggested (Cowper 1979) that antitopic constructions are only possible when the pronoun to which the antitopic is related is a clitic pronoun. In fact, it has sometimes been suggested that preverbal topic constructions are also restricted in this way (Lambrecht 1981). If this were the case, the construction would certainly bear a strong resemblance to grammatical agreement. Basically my argument against this position is simply that the facts are otherwise, as shown by the grammaticality for at least some speakers of sentences like (22); and that it is implausible to suggest that such constructions involve anything other than an anaphoric relation.

(22) Pierre se bat avec elle sans cesse. Marie.
'Pierre fights with her all the time, Marie.'

But I mention it here because I think the difficulty of getting clear judgments about the data in this area arises for an interesting reason. As in many languages with two series of pronouns, the independent pronouns in French normally have a contrastive function, while the clitics have an anaphoric one (Bresnan and Mchombo 1986). But because the usual anaphoric pronouns are verbal clitics, there are some constructions in which they cannot appear for purely structural reasons. For example, given a verb which takes as an argument a prepositional phrase other than one with 'à' or 'de', the only way to express that argument pronominally is with an independent pronoun in a prepositional phrase, as in (22). In

these cases, the independent pronouns can serve either discourse role, but the possibility of the contrastive reading means that much more care must be taken in establishing a context suitable for an anaphoric reading. In fact, the very example given by Lambrecht to show that topics may not be bound to independent pronouns, as in (23a), is given in the context of an argument that the clitic system has undergone certain changes such that it is now possible for the oblique clitic 'y' to be used for human referents and it is therefore possible to use it in topic constructions such as (23b). The availability of the clitic would in fact be expected to make the choice of the independent pronoun impossible because of its discourse properties.

(23) a. *Son frère, Pierre pense à lui.
'His brother, Pierre thinks about him.'

b. Son frère, Pierre y pense.
'His brother, Pierre thinks about him.'

Anaphoric agreement. I would like to conclude this section on some difficulties in distinguishing sentence-internal anaphora from grammatical agreement in the case of antitopics with some comments on the role of agreement features such as person, number and gender in anaphora in general, and some further evidence that one view of the matter provides for the anaphoric analysis. It has been suggested (Wiese 1983) that syntactic conditions of agreement should not be required of anaphoric relations at all, in light of the fact that disagreement is clearly acceptable where the semantic interpretation justifies it:

(24) Ich habe das Mädchen gesehen als sie das Haus verliess.
'I saw the girl(neut) when she(fem) left the house.'

Nonconformity by a pronoun with some noun phrase with respect to agreement features may prevent that noun phrase from being picked up as the referent of the pronoun, but under certain conditions it need not do so. In contrast, he suggests, agreement is a syntactic condition whose violation results in ungrammaticality.

Now in French, there are some nouns with respect to which there may arise conflicts between grammatical and natural gender, such as 'la sentinelle', which is grammatically feminine but, meaning 'the sentinel', often has a male referent. In such cases, within a clause grammatical gender must be respected, while in deictic contexts, natural gender will be:

(25) La sentinelle est grande/*grand.
'The sentinel(fem) is tall(fem/masc).'

(26) Il/*Elle [pointing to a male sentinel] m'a poussé.
'He/She pushed me.'

In topic and antitopic constructions, either choice is possible, but in antitopic constructions the choice of natural gender may actually be preferred on the grounds that conformity to grammatical gender would mislead one's interlocutor:

(27) a. La sentinelle, il/elle m'a poussé.
'The sentinel, he/she pushed me.'

b. ?Elle/Il m'a poussé, la sentinelle.
'She/he pushed me, the sentinel.'

On the view of the role of agreement features outlined above, the possibility of the discrepancy is compatible with the view that antitopics (and topics) are involved in an anaphoric relation with the clitics, but not with the view that they are involved in a relation of grammatical agreement.

3. Non-Anaphoric Topics

Finally I would like to turn to a topic construction in spoken French which poses a different kind of problem for the anaphoric analysis. Lambrecht describes topic constructions in which the topic is simply not related at all to the argument structure of the verb:

(28) a. La prison, y a pas à se plaindre.
'Prison, there's nothing to complain about.'

b. Leurs cousins, les Becker, c'est la même chose.
'Their cousins, the Beckers, it's the same thing.'

Such topics do not occur in Chichewa. This suggests that they may be a rather different kind of phenomenon; and in fact, in French they do seem to have properties which set them apart. First, they seem to have to be followed by a subjective evaluation rather than by an objective proposition.[4] This is true of both the examples in (28), and is shown in the contrast in (29):

(29) a. Cet incendie de forêt, les pompiers sont arrivés juste à l'heure.
'That forest fire, the firefighters arrived just in time.'

b. *Cet incendie de forêt, les pompiers sont arrivés à onze heures.
'That forest fire, the firefighters arrived at eleven o'clock.'

Second, they must be sentence initial. They cannot occur as antitopics:

(30) a. *Y a pas à se plaindre, (à) la prison.

b. *C'est la même chose, leurs cousins, les Becker.

More telling, usually when there is more than one topic their relative order is free:

(31) a. Cet incendie de forêt, les pompiers, ils l'ont éteint sans problème.
'That forest fire, the firefighters, they put it out without trouble.'

b. Les pompiers, cet incendie de forêt, ils l'ont éteint sans problème.
'The firefighters, that forest fire, they put it out without trouble.'

But where one topic is of the kind that is not related to an argument, that topic generally must be first:

(32) a. Cet incendie de forêt, les pompiers, ils étaient formidables.
'That forest fire, the firefighters, they were terrific.'

b. *Les pompiers, cet incendie de forêt, ils étaient formidables.
'The firefighters, that forest fire, they were terrific.'

Finally, there can be only one topic of this kind in a sentence.

The fact that these topics thus form an identifiable class seems to make it more appropriate than problematic that they should be analyzed in a somewhat different way from the anaphoric analysis given for most topics. And in fact they may have a rather different pragmatic function: They have sometimes been described as 'setting the scene', as 'themes', etc. (Chafe 1976).

It is interesting to note that only these non-anaphoric topics really share most of the characteristics attributed to topics in descriptions of 'topic-comment' languages, such as not being required to bear any relation to the argument structure of the verb, never numbering more than one in a sentence, and always occurring in sentence initial position (Li and Thompson 1976). However, spoken French does not in general seem to share the typological characteristics of topic-comment languages. For example, in prototypical topic-comment languages, constructions in which the topic names some category and the comment predicates some property of a member of that category, as in the following example from Japanese, are claimed to be pervasive:

(33) Sakana wa tai ga oisii.
fish top red snapper subj delicious
'Fish, red snapper is delicious.'

But though such sentences are possible in French in certain contexts, they are not really typical. Similarly, in topic-comment languages non-anaphoric topics are not confined to subjective contexts as in French; they are perfectly natural in objective contexts in Mandarin, for example:

(34) Nei-chang huo xiaofang-dui shiyi dian dao de.
that-classifier fire fire-brigade 11 o'clock arrive particle
'That fire, the firefighters arrived at 11 o'clock.'

4. Conclusion

A variety of constructions have been characterized as topics in descriptions of various languages. Although there are clearly certain pragmatic and formal properties which such constructions share, in other respects they seem to form a rather heterogeneous group. Within French alone it is possible to distinguish topics, antitopics and these non-anaphoric topics. But it also seems that if the differences among these different kinds of topics are recognized, a certain order emerges amidst the heterogeneity, and a formal analysis based on a distinction between discourse functions and argument functions can be maintained.

Notes

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[2]The relation of these elements to the verb may be more accurately described by the term 'incorporated pronoun' than by the term 'clitic'; but in the absence of an analysis to decide the question I will simply follow traditional usage in calling them clitics. For the sake of convenience I will also represent them with the orthography of written French, which does not reflect the phonetic erosion they typically undergo. For a thorough description of the clitic system of spoken French see Lambrecht (1981).

[3]Such constructions are frequently referred to as 'afterthoughts' and are sometimes claimed to result from a planning error whereby the speaker erroneously assumes that a referent is sufficiently recoverable for a pronoun to be used but, realizing too late that it is not, adds a full noun phrase at the end of the clause (Givon 1976). Lambrecht convincingly argues that antitopics should be distinguished from such constructions because of their frequency, the identifiability of their pragmatic function in discourse, and the fact that while afterthoughts are typically stressed and preceded by a pause, antitopics are unstressed and not preceded by a pause. To these arguments I would add the frequency with which first and second-person independent pronouns serve as antitopics: It would make no sense to claim that a speaker might suddenly realize that the referent of a first or second person pronoun -- namely, the speaker or his addressee -- was not readily recoverable from the discourse.

[4]It is not surprising that subjectivity should be an important concept in topic constructions. The very notion of a topic implies a kind of invitation on the part of the speaker for a particular point of view to be shared with respect to the discourse. This is at least partly why definiteness is so important with respect to topics: The use of a definite article likewise typically creates a shared world between the speaker and his addressee.

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It's not just the Valley Girls: A study of California English

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In the 1950's, when David Reed instituted the Linguistic Atlas of the Pacific Coast (LAPC), nothing could be said about California or the West Coast in general that was specific to the area. Studies during that time concentrated on how the West Coast speech patterns reflected Eastern demographic origins. It was also the popular belief among Californians in the '50's and '60's that California had no regional speech traits. That belief has now changed, both among Californians and people elsewhere in the nation. In a recent article by Preston (1986), it was clearly demonstrated that Americans percieve California as a distinctive speech area. Preston says that this new perception is "certainly in part from the popular culture caricature of the state and its population--surf, hot tubs, Hollywood, cults, Silicon Valley, flower children, and so on" (p. 229). The characterization of California as a speech area is also attributed to caricatures of California speech patterns in the media--these are usually parodies, such as the Marin County speech satirized in the novel "Serial", the recording "Valley Girl", by Frank Zappa with his daughter Moon-unit, and "Surfer Chick", by Whoopi Goldberg.

There is, then, a discrepency between what the lay public believes about the status of California as a distinctive speech area, and the published works from the '50's and '60's by dialect geographers. It is the intent of this paper to explore the issue of whether present-day California is or is not a speech area.

Parodies. Two famous parodies of the speech of California teenagers, one by Zappa (1982) and one by Goldberg (1985)[1], display a number of notable phonological traits. Those relevant to this study are:

(1) Fronting of (o) and (u) in words like *totally* [t^{h} ɛ^{ʊ}teli], *Encino* [ɛnsiynɛ^{ʊ}], *know* [nɪʊ], *spoon* [spɨ^{ʊ}n], etc.;

(2) lowering of (ɪ) and (ɛ), as in *bitchin'* [bɛčɪn] and *forget* [forgɛ^{y}t]. Some items are backed, as in *confession* [kɨnfʌšɨn], *them* [ðʌm].

(3) lowering and backing of (æ), as in *handle* [handel], *to the max* [maks], and *Catholic* [k ^{h}aθelɪk].

LAPC Survey. In the 1950's, fieldworkers for the LAPC interviewed 270 native-born speakers in 78 California towns and cities, using Kurath's methodology. A list of 608 vocabulary items was elicited from each speaker, and the responses were transcribed phonetically. In this data from the '50's, there is virtually no indication of the sorts of vowel qualities that we observe in the present-day parodies. If California speakers do in fact exhibit these vowel shifts, the shifts have occurred *since* the '50's.

The 1986 Seminar. A graduate seminar in Spring 1986 did a pilot study of the speech of native Californians, predominantly young middle-class speakers, with the majority from the Bay Area. We studied aspects of the vowel systems of these speakers, and compared them to the phonetic transcriptions done in the 50's by Reed and his associates, to determine whether the vowels of the two groups differed. Also, a collection of tapes made by Greet in the '20's of people from all over the United States reading the story "Grip the Rat" provided us with some important bases of comparison to the nation as a whole. Interviewers spoke with 37 people, aiming at acquiring samples of informal, unselfconscious speech. 22 of these interviews were selected for common analysis, on the basis of recording quality and presence of informal narrative. We concentrated primarily on the speech of young people, where we expected to find these shifts most prominant. Thus 19 of the speakers were high-school or college students, ranging in age from 16 to 22. Three other speakers were older: aged 27, 40, and 63. Each seminar student chose a particular vowel or set of vowels for study[2].

Vowel quality was scored subjectively, with an agreed-on quality for a zero-point, and scores given to each token of 0, 1 or 2 depending on the degree to which a token differed from the zero-point. (For some variables, scores were given on a scale of 0 to 1.) For each speaker, scores for the tokens of a given vowel were added together and then multiplied by a constant, so that overall scores could range from 0-200 -- 200 representing extreme shifting.

/(u), (ʊ), and (o)/. It is quite clear that California vowels are in motion among people under 30. The most obvious difference from the '50's are the back vowels, specifically (u), (ʊ) and (o), which are clearly more front and less rounded than their 1950's counterparts (as indicated by LAPC transcriptions). The vowels heard today also exhibit frequent truncation of the offglide. Thus we hear in young Californian speakers such pronunciations as [gʉd] for "good", and [tʰo<<ʷtɬli] for "totally". (/ʌ/ was not studied, but informal observation indicated that it too is fronting, one notable pronunciation being [stɪki bɛnz] for "stickey buns".) Bremner compared scores on fronting and unrounding of /u/ and /ʊ/ in the 1986 California interviews with scores based on her hearing of the Greet tapes; these tapes show some degree of fronting for speakers from parts of the south and midlands, and to a lesser degree for speakers from the midwest. There was virtually no fronting in the Northeast or along the eastern seaboard. The first two bars on Figure 1 show the percentage of tokens with fronting/unrounding in Greet's survey. This can be taken as a baseline against which the present

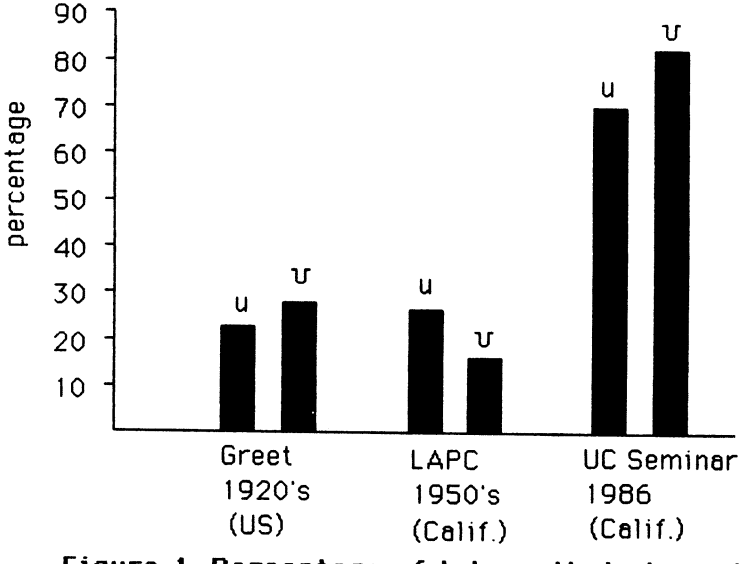


Figure 1. Percentage of tokens that showed some degree of fronting in 3 linguistic surveys

study can be measured. The LAPC transcriptions indicate that about one fourth of the speakers used some (but only a few) slightly fronted versions of /u/, transcribed as [u˂ʷ] or [ʊ˂ʷ]. Very rarely did the fieldworkers write the more fronted [ɨᵘ]. The LAPC data looks much like the overall scores from the Greet tapes. As the right-hand bar on Figure 1 shows, the percentage of tokens that show fronting in the 1986 survey is very high indeed for our sample.

Luthin examined LAPC records briefly and found virtually no fronting for /o/ there, but found a marked degree of (o)-fronting in young California speakers today. Figure 2 shows scores for (o)-fronting for the subjects of the study, arranged by age. For those subjects with scores above 60 points, all are middle-class, Anglo (or in two cases Asian), all are in the 16-22 age-range, and all were

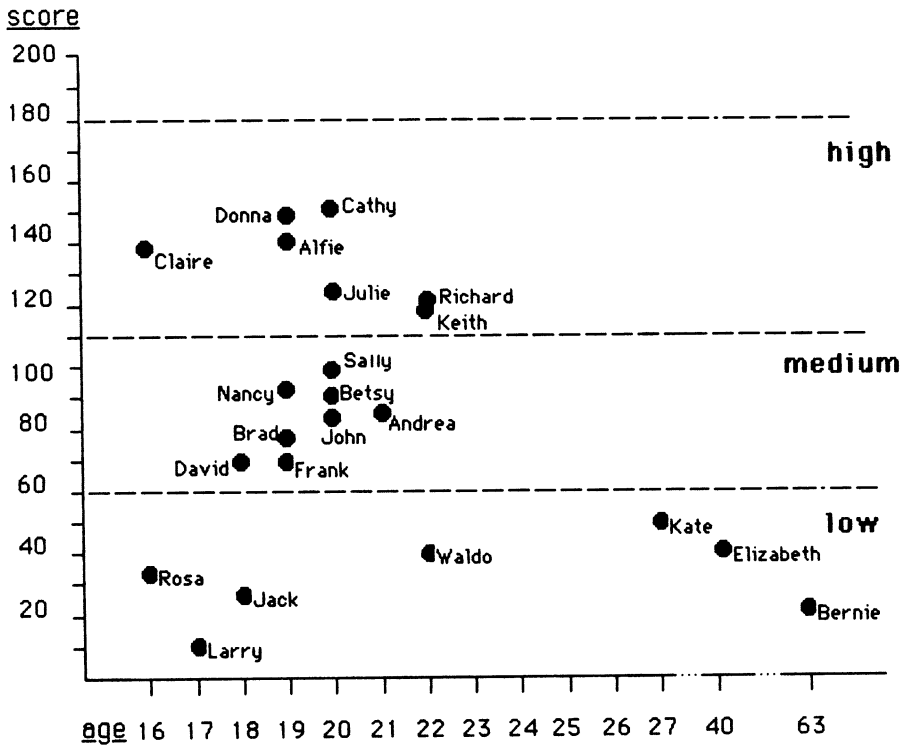


Figure 2. Overall (o)-fronting scores by age, for 22 subjects.

raised in urban or suburban settings. The three oldest speakers all had low scores, with the oldest one (age 63) approaching 0. For the four young speakers who scored low, one is Hispanic, one Black, one comes from a small rural town in Northern California, and the last--Waldo[3]--discussed at length his disdain for the California Speech Style (parodying it with skill, but keeping his natural speech swept clean of the new variants under study here).

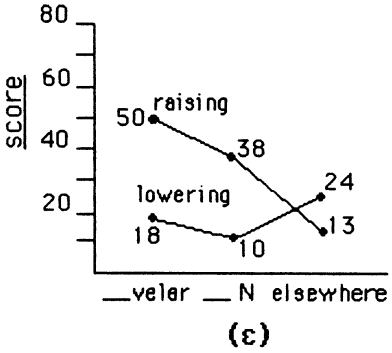
Both Luthin and Bremner observed that the back vowels before /r/ and /l/ do not front at all. This is true in the parodies as well.

The phenomenon of fronting with its accompanying unrounding and truncation figures highly in the recorded parodies of California speech heard earlier. The findings of the seminar show that fronting in natural speech, while of course not as extreme as its parodies, is nevertheless an observable characteristic of the speech patterns of young middle-class Anglo (and perhaps Asian) Californians.

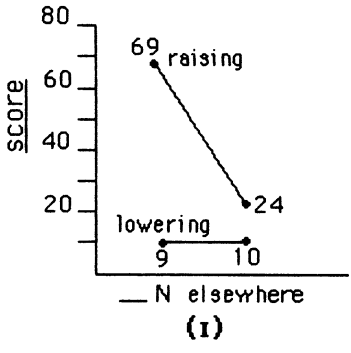
Front vowels. The parodies show lowering and some backing of the front vowels. The seminar findings for front vowels are more complex. Van Clay studied variation in the short front vowels (ɛ) and (ɪ), and Lerner studied (æ). They found that the front vowels exhibit both lowering and raising. First of all, phonological environment plays an important role: as shown in Figure 3, speakers raise (ɛ) after velars (as in *get*); and (ɪ), (ɛ) and (æ) are all raised before nasals (as in *bend* or *thanks)*, or with spontaneous nasalization of the vowel, as in *actually* /æ̃ˆkšɬli/. Before /l/ and /r/ the front vowels are lowered and backed (as in *fell* /fɛˀl/).

Interestingly, three of the same young individuals who received the lowest scores for fronting--the Black speaker, Hispanic speaker, and rural speaker--all displayed the highest scores for raising. The oldest speaker, Bernie, also exhibited high raising scores. For (ɛ), Van Clay separated urban speakers (LA and the Bay Area) from people who grew up elsewhere (smaller towns and cities in California), and found that the urban speakers raise much less than the others. Lowering scores, on the other hand, seem not to be affected by whether the speaker is urban or rural. Note from Figure 4, however, that urban speakers lower more than they raise, while the rural speakers raise more than they lower.

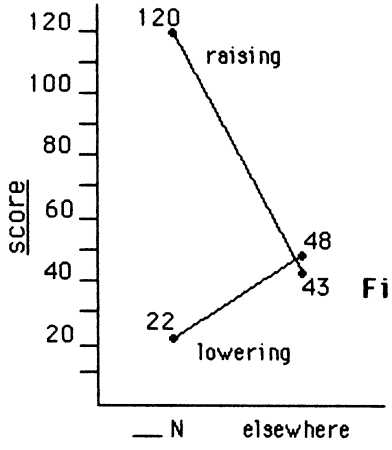
It seems apparent from the findings by Lerner and Van Clay that vowel lowering, while not as dramatic as fronting, is nevertheless present in California, and is especially observable among the same



(ɛ)

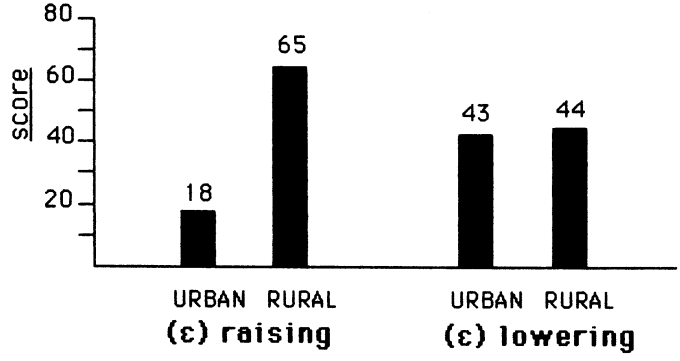


(ɪ)



(æ)

Figure 3: Environmental effects on raising and lowering



(ɛ) raising (ɛ) lowering

Figure 4: Raising and lowering of (ɛ) by urban or rural childhood home

group of speakers that front the most-- young middle-class Anglo urban Californians. And although this same group raises front vowels in certain phonological environments, they raise less than rural Californians do.

(ɔ). One widely-noted characteristic of Western American speech is the merger of /ɔ/ and /ɑ/. The Dictionary of American Regional English (DARE) states that there is no /ɔ/-/ɑ/ distinction in the Western half of the United States. In the '50's, David DeCamp (who worked with LAPC and wrote his dissertation on San Francisco speech) wrote, more conservatively: "It is possible that the peculiar use of fronted allophones of /ɔ/ is an indication that this coalescence is beginning in San Francisco." (Decamp, 1953: 555).

It might be expected that this merger, so characteristic of Western speech, would form a distinctive part of the California speech style and would be parodied by Zappa and Goldberg. But findings by Corcoran and Moonwomon indicate that the merger is *not* complete, and while movement of /ɔ/ towards /ɑ/ is indicated, it is not especially vigorous. Furthermore, there is no exaggeration of the (ɔ) variable in the Zappa and Goldberg pieces--their pronounciation of (ɔ) seems to be about the same as natural speech by our subjects.

Moonwomon and Corcoran concentrated on those cases where /ɔ/ variably fronts and lowers.[4] They found that lowering of /ɔ/ is strongly inhibited when /l/ follows, as shown in Figure 5. Due to the

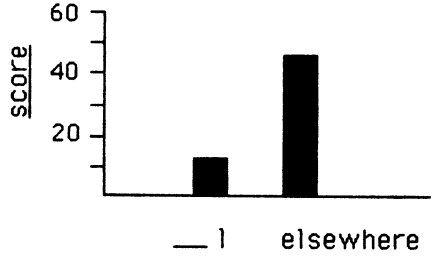


Figure 5. phonological influences on lowering of (ɔ)

peculiar history of this phoneme, over half of all tokens with the (ɔ) variable are in this environment. Thus phonetically, [ɔ] is alive and well in California, although it may well be on its way toward

redefinition as an allophonic variant of /ɑ/. Nevertheless, even in environments where lowering is not inhibited, scores are quite low, the most extreme speaker receiving an overall score of 100 out of 200.

One interesting finding by Moonwomon was that lowering increases in careful speech: there is more lowering in reading and elicited wordlists than in informal monolog. In Figure 6, lowering scores are shown for 5 speakers, for informal speech (I), reading (R) and elicited words in isolation (E). This finding indicates that the lowered variant is a target toward which speakers are moving. However, this shift is not rapid, and comparison with LAPC findings shows surprisingly little progress from the '50's. (ɔ), then, does not seem to have much significance in the vowel shifts of young Californians. It is an older change in progress, moving quietly along without much speed.

Summary. To recapitulate, we find that among young California speakers, particulary urban middle class Anglos, back vowels are

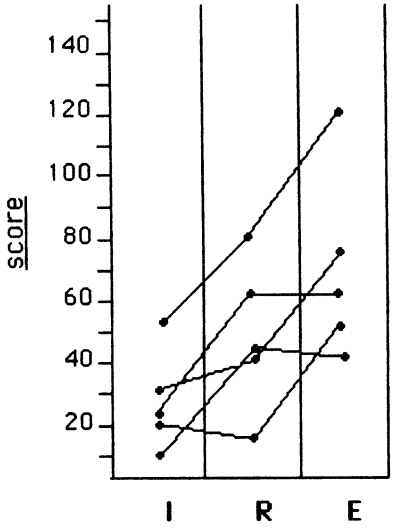


Figure 6: lowering scores for (ɔ) for interview, reading, and elicited words

shifting forward very noticeably; front vowels have raised variants in some phonological environments and lowered variants elsewhere, with lowering not very dramatic, but nevertheless most prevalent in the speech of the people who also front the most. Lowering of /ɔ/ toward /ɑ/ is occuring slowly in the population as a whole, but does not play an important role in the speech of young Californians, nor is it parodied.

Discussion. None of the shifts discussed here are actually limited to California. Fronting of back vowels is reported in Philadelphia (Labov, 1980) and Detroit (Eckert, 1986), as is lowering and backing of /ɪ/ and /ɛ/ (but not /æ/). Eckert further notes that competing movements of front vowels are occuring among the Detroit youth, with a tendency for speakers who might be associated with the middle class to lower more, and a tendency for lower-middle class or working class youths to raise more.

Beyond these geographically specific studies, Labov, Yaeger and Steiner (1972) have established some general principles of vowel shifting that fit the California shifts well: the two relevant principles are (1) in chain shifts, lax vowels usually fall, and (2) back vowels move to the front.

Thus it appears that California is not doing anything particularly unusual. We must wonder if perhaps the youth of California does not have a regionally specific vowel system after all. A deeper comparative study is in order here, to determine whether this chain shift is more extreme in California than elsewhere, or has different characteristics. Eckert (1986) suggests the possibility that the lowering of (ɪ) and (ɛ) in Detroit has spread from the West. To what extent California is leading this shift, if it is leading at all, is not clear.

The only facts we can be certain of at this point are that the vowels are shifting, and that these shifts are perceived to be characteristic of California. It will be very interesting to see, over the next few decades, whether this perception will itself play a role in sound change, by serving as a self-fulfilling prophecy. The chain-shift occurring here in California is so new, that it is not yet possible to determine whether it is a youthful phonological fad like some of the vocabulary that accompanies it, or whether we are really observing sound change in progress.

More interesting yet are the complex attitudes expressed toward

what is percieved as the California speech style. On the one hand, it is the speech of a privileged group of young people-- Anglo, urban, and financially secure. On the other hand, a good deal of ridicule attaches to the speech style, and attitudes expressed both in the parodies and among a number of our subjects associate this speech style with a vapid, irresponsible, hedonistic approach to life. A recent interview on KALX[5] with a musical group from Seattle demonstrates this attitude:

Arnie: We actually heard a real LA girl talk, a Valley Girl.

Ashley: She said a whole paragraph, and it was amazing. We were standing and staring at her, and I think she thought we were listening to her but really we were just amazed at her "rully" sort of sounds that came out...."

Andrew: It's like some kind of cultural bastardization, y'know it's like it has nothing to do with the English language.

Arnie: Yeah, it's just "mellow cloud, cloud language."

This sort of ridicule suggests the possibility that the sound shifts are stigmatized. On the other hand, Preston's study shows that even though his respondents tend to associate California speech with hot-tubs and Valley girls, when asked to rank the U.S. speech areas in terms of overall correctness, California always comes out on top. The caricatures that all respondents refer to in their characterization of California as a speech area, then, do not indicate stigma at all. On the contrary, California is seen as a center of prestigeful speech patterns.

It is quite possible, then, that these new sound shifts will progress along the lines of many other California phenomena, becoming more extreme and spreading geographically. Gerti Thomas, member of the new California Task Force to Promote Self-Esteem, put it like this during her defence of the task force against the ridicule being heaped upon it: "We're the leaders. We have great minds thinking above the rest of the world, and people may say, 'There goes California again,' but nine times out of ten the rest of the world follows." (The Tribune, Feb. 9, 1987.)

NOTES

[1]Many thanks to Monica Macaulay, who provided us with tapes of Zappa and Goldberg, and found the full references for them.

[2]Details of their results can be found in unpublished papers by Bremner, Corcoran, Lerner, Luthin, Moonwomon, and Van Clay.

[3]Names given here are pseudonyms.

[4]They did not look in detail at (ɔ) before /r/, where the vowel appears to be merging with /o/.

[5]Thanks again to Monica Macaulay, who conducted this interview of the musical group Uncle Bonsai, from Seattle, in February 1986. She also provided us with a transcription of the relevant portions.

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ACQUISITION DATA AND PHONOLOGICAL THEORY: THE CASE OF SPANISH STRESS

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University of Chicago

The goal of this paper is to use data from an experiment in language acquisition to evaluate three theories of Spanish stress.[1] I hope to show that acquisition data can be of use, not only in judging between theories, but in pointing out new directions for future theorizing to take.

The paper is organized as follows. I will first outline some basic facts of Spanish stress, describe the similarities and differences between three theories proposed to account for them, and discuss why one might want to use language acquisition data to help choose among them. Next, I will show how my experimental data favor one theory -- Harris' metrical account -- over the other two. Finally, I will discuss how some additional aspects of the acquisition data highlight facts of Spanish that are unaccounted for under any current analysis.

Spanish Stress

[2]

Stress on Spanish non-verbs is neither rigidly phonologically conditioned, nor entirely free. Stress can be found on any of the last three syllables of a word, regardless of the final segment of the word, as shown in Table 1.

Table 1
Possible stress placements in Spanish

stress	vowel-final words	consonant-final words
final	mamá 'Mommy'	tenedór 'fork'
penultimate	cuchára 'spoon'	azúcar 'sugar'
ante-penultimate	teléfono 'telephone'	hipótesis 'hypothesis'

Of these six possible placements, two are dominant in frequency: final stress on consonant-final words, and penultimate stress on vowel-final words. These two types account for around 90% of Spanish non-verb tokens, at least in written text (Hooper & Terrell 1976: 67).

Theories of Spanish stress

The three theories to be considered here are Whitley's Distinctive Stress Approach (1976), Hooper and Terrell's natural generative phonology analysis (1976), and Harris' metrical analysis (1983). I will first describe their main stress rules, and how they handle exceptions to these rules, and then describe which stress patterns they each prohibit.

Whitley's main stress rule stresses the penultimate syllable of a word, thus yielding correct stress on words like cuchára and azúcar. All other words must have a [+stress] diacritic on their stressed syllable to avoid receiving penultimate stress. In many cases, the [+stress] marking is underlying. However, redundancy rules supply [+stress] on certain large classes of exceptions: final-stressed consonant-final words formed with derivational suffixes (e.g., libertád 'liberty', solár 'solar'), and antepenultimate-stressed, vowel-final words formed with the suffixes -ico/a and -ulo/a (e.g. química 'chemistry', círculo 'circle') or with Greco-Latin formatives such as -logo and -metro (e.g., prólogo 'prologue', kilómetro 'kilometer').

Hooper and Terrell's main stress rule assigns stress to the final syllable of the stem. For most vowel-final words, the final vowel is outside the stem, as shown by its loss in derivation (e.g., cuchára 'spoon', cucharíta 'little spoon'). Thus the rule yields the two dominant stress categories of penultimate stress on vowel-final words and final stress on consonant-final words, as shown in (1) and (2) (where ']' indicates the rightmost stem boundary):

1) cuchár]a
2) tenedór]

For final-stressed, vowel-final words like mamá, Hooper and Terrell make use of the observation that the final vowel is part of the stem, as shown by its retention in derivation: cf. mamá v. the diminutive mamacíta. Application of the stem-final stress rule thus yields final stress on words of this type, as in (3):

3) mamá]

Finally, for words like azúcar and teléfono, a lexical diacritic 'X' on the stem-final syllable shifts stress one syllable leftward:

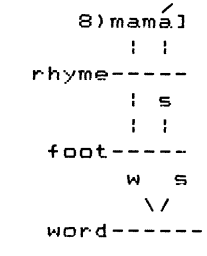
4) azúcar]
X

5) teléfon]o
X

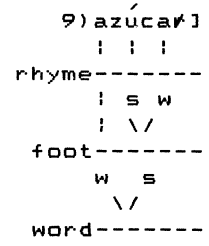
Harris' main stress rule has two parts: a foot formation rule which builds left-dominant, quantity-sensitive binary feet from right to left, and a tree-formation rule which builds a right-dominant word tree. Like Hooper and Terrell's main stress rule, this yields the two dominant categories of penultimate stress on vowel-final words and (because of quantity sensitivity) final stress on consonant-final words:

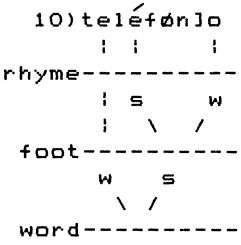


Again like Hooper and Terrell, Harris' treatment of mamá-type words depends on the fact that the final vowel is inside the derivational stem. His Strong Foot Rule stipulates that such a vowel be labeled strong, yielding derivations such as (8):



Finally, and again like Hooper and Terrell, Harris uses lexical marking to assign stress to azúcar and teléfono types. The lexical marking he uses is extrametricality, which causes stress to be 'blind' to a particular segment, as in (9) and (10) (where a slash indicates an extrametrical segment):





Thus far we have seen that the three theories differ in what their main stress rules generate as regular, versus what must be marked as exceptional or irregular. In Whitley's treatment, penultimate stress is always regular, and non-penultimate stress always exceptional. In the other two, regularity depends on the final segment of the word: penultimate stress is regular for vowel-final words, and final stress for consonant-final words.

The theories differ further in which stress types are excluded altogether. Whitley's account includes a rule which explicitly limits stress to the last three syllables of a word, thus forbidding words such as the hypothetical *cátapana. Such words are also exluded under Hooper and Terrell's theory, since the X diacritic moves stress only as far back as the penultimate syllable of the stem:

11)*cátapanla
X

For the same reason, this theory (unlike Whitley's) also prohibits antepenultimate stress on consonant-final words where the final consonant is inside the derivational stem; compare the hypothetical and forbidden (12) with the permitted (13):

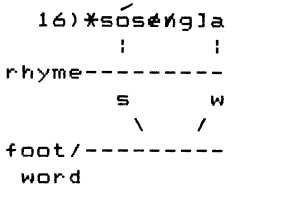
12)*pánaquil]
X

13)hipóteslis (-is is stem-external; cf. hipotético)
X

Harris' model likewise excludes *cátapana and *pánaquil types, by virtue of the proposed universal Peripherality Condition: that extrametrical segments must be peripheral in (i.e., at the edge of) their domains. In the case of Spanish, this means that only a stem- or word-final rhyme segment can be extrametrical. *Cátapana or *pánaquil would require two extrametrical segments within the stem, thus violating this condition:



The Peripherality Condition also prohibits a third stress type: antepenultimate stress on words with a branching rhyme in the penult. Again, two extrametrical segments would be needed, as in (16):



Thus all three theories prohibit cátapana types, all but Whitley's prohibit pánaquil types, and only Harris' prohibits sósenga types.

Motivation for the study

On descriptive grounds alone, Harris' theory seems superior to the other two. Along with Hooper & Terrell's account, it holds the most frequent stress patterns to be regular (penultimate for V# words, final for C# words). In addition, it accounts for more prohibited stress types than do the other two theories.

The purpose of gathering psycholinguistic data, whether from children or from adults, is to ensure that this superiority can be attributed to the speaker as well as to the linguist. To take an extreme view, it may be that the relative freedom of stress placement in Spanish leads speakers not to formulate any stress rules at all. Barring this unlikely but nevertheless possible scenario, speakers of Spanish might, for example, consider sósenga types to be no more irregular than bóchaca types, or (as in Whitley's analysis) associate final stress on consonant-final words with specific suffixes. Given the benefit of psycholinguistic data, there is a simple reason why child data on Spanish stress are preferable to adult data: stress is marked in Spanish orthography, and studying pre-literate children avoids the difficulty of eliciting knowledge of phonological as opposed to orthographic rules.

The experiment

In order to access children's knowledge of Spanish stress rules, I had fifty 3-, 4-, and 5-year-old Spanish-speaking children imitate novel Spanish words minimally contrasting in stress placement, the assumption being that regular stress patterns should be easier to imitate. The stimuli consisted of 35 sets of 2, 3, or 4 novel words that were segmentally identical but contrasted in stress placement. These 35 sets were further divided into seven groups of five sets each, based on their length and syllable structure. As shown in Table 2, four of these groups tested regular/irregular contrasts on two- and three-syllable consonant- and vowel-final words. The remaining three contrasted the three possible prohibited stress types (cátapana, pánaguil, and sósenga) with segmentally identical words with regular or irregular stress.

Table 2
Stimulus groups for the imitation experiment

1) 5 CVCV pairs
   e.g., gága, gagá

2) 5 CVCVCV triplets
   e.g., bóchaca, bocháca, bochacá

3) 5 CVCVC pairs
   e.g., guífor, guifór

4) 5 CVCVCVC pairs
   e.g., cabádon, cabadón

5) 5 CVCVCVCV quadruplets
   e.g., cátapana, catápana, catapána, catapaná

6) 5 CVCVCCV triplets
   e.g., sósenga, sosénga, sosengá

7) 5 CVCVCVC triplets
   e.g., pánaguil, panáguil, panaguíl

These novel words were presented in random order, and the children were asked to imitate them. The ease of imitation for each type (e.g., CVCV) was measured according to the number of structure-changing errors made. This included deletion or addition or segments or syllables, stress shift, or metathesis: any error that did more than alter an individual segment.

Evaluating the theories

The results of the experiment, as shown in Table 3, support Harris' theory over the other two.3 Let us first consider the regular/irregular contrasts. Recall that Whitley's main stress rule yields penultimate stress on all words as the regular case, whereas Hooper & Terrell's and Harris' yield penultimate stress on V# words, and final stress on C# words. The data show that as the latter two theories would predict, on vowel-final words children had the least difficulty with penultimate-stress, while for consonant-final words, final stress was easiest. In addition, whereas Whitley's use of redundancy rules implies that the difficulty of imitating guifór and bochaca types should vary with the phonetic characteristics of individual words, there were no word effects in the data. Thus Whitley's account, as opposed to Hooper & Terrell's and Harris', fails to account for the data so far.

Table 3
Percent error on imitations

type (example)	stress				N
	´6666#	´666#	´66#	´6#	
CVCV (gaga)	----	----	7	23	115
CVCVCV (bochaca)	----	20	13	32	245
CVCVCCV (sosenga)	----	77	42	75	250
CVCVCVCV (catapana)	56	33	14	54	130
CVCVC (guifor)	----	----	37	18	115
CVCVCVC (cabadon)	----	----	52	22	245
CVCVCVC (panaquil)	----	34	48	20	250

The data regarding the possible prohibited types cátapana, pánaquil, and sósenga allow us to further distinguish between Hooper & Terrell's and Harris' accounts. Recall that the former prohibits only cátapana and pánaquil types, while the latter prohibits all three. In fact, children found all three harder to imitate than comparable irregulars. They made more errors on cátapana types than on catápana types (though not more than on catapaná types, a point I shall return

to below). And they made more errors on both pánaguil (closed final) and sósenga (closed penult) types than on bóchaca (open final and penult) types.4 Thus Harris' theory, unlike Hooper and Terrell's, makes accurate predictions for prohibited-type words, as well as for regulars versus irregulars.

Further facts for future theorizing

The distinctions between regular, irregular, and prohibited stress account for most, but not all, of the error patterns in the children's data. The most dramatic additional fact to emerge from the data is the unexpected difficulty that children encountered in imitating long, vowel-final words with final stress. Final-stressed bochacá and catapaná types were harder to imitate than the corresponding irregular, antepenultimate-stressed bóchaca and catápana types. And sosengá and catapaná types were just as hard to imitate as the corresponding prohibited sósenga and cátapana types.

The difficulty posed by long final-stressed V# words is especially striking when contrasted with the relative ease of imitation of long penultimate-stressed V# types. While children made more errors on catapaná types than on bochacá types, and more on bochacá types than on gagá types, their scores on catapána, bocháca, and gágá types were statistically indistinguishable.

This distinction is particularly interesting because it jibes with a hitherto unnoticed fact of Spanish: long V# types are few and obscure. Whitley, in his extensive list of V# words, gives only six that are four syllables long. Of these, only one is common: israelí 'Israeli'. Of the remaining examples, one is borrowed and the others obscure: Misisipí, arracachá 'kind of plant', caracará 'native American hawk-like bird', maravedí 'old Spanish coin', and zalamelé 'flattery' (Whitley 1976: 318). At the other end of the scale, two-syllable V# words are both numerous and commonly used: they include aquí and acá 'here', allí and allá 'there', bebé 'baby', café 'coffee', champú 'shampoo', mamá 'Mommy', papá 'Daddy', menú 'menu', Perú, and rubí 'ruby'.

Two difficulties arise when considering how this observation might be incorporated into future theoretical accounts of Spanish stress. The first is aesthetic. Ideally, one would like to tie together Spanish speakers' avoidance of long sequences of unstressed syllables at either the beginning or the end of a word (i.e., catapaná or cátapana types). However, under current theorizing the two types are unrelated. The badness of the first must be expressed as a restriction

on the possible length of vowel-final stems, while that of the latter falls out as a consequence of the Peripherality Condition.

The second difficulty is more general: there is simply no provision made in any current model for expressing degrees of irregularity. At least for children, categorizing types such as bóchaca and bochacá or gagá and catapaná together as 'irregular' fails to capture the significant difference in speakers' processing of words of the different types. It is beyond the scope of this paper to suggest how degrees of irregularity might be expressed formally, but the data presented here suggest that an attempt would be worthwhile.

1

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2

I will restrict the discussion to non-verbs (nouns, adjectives, adverbs, prepositions, and function words). Stress on verbs is morphologically governed, and is generally considered independently (see e.g. Harris 1983).

3

Since there were few developmental differences in the data, Table 3 combines data from all three age groups.

4

One might ask whether children's greater difficulty with sósenga and pánaguil types (as opposed to bochaca types) might be due to a general effect of the closed penultimate or final syllable, as opposed to an effect specific to antepenultimate-stressed words. As Table 3 shows, panaguil types were not in general harder than bochaca types, because the final consonant changed the basic regularity versus irregularity of the word. (Regular) panaguíl types were easier than (irregular) bochacá types, while (irregular) panáguil types were harder than (regular) bochaca types. In contrast, sosenga types were harder than bochaca types regardless of stress placement. Crucially, though, the difficulty posed by the closed penultimate was greater for antepe-

nultimate-stressed words than for penultimate- or final-stressed words.

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Emergent Grammar

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"Fragments are the only forms I trust."
- Donald Barthelme, See the Moon?

"Essence is expressed by grammar."
- Ludwig Wittgenstein,
Philosophical Investigations 371

1 Emergent Grammar[1]

As explorations in "functional grammar" accumulate in volume and significance, it has become a standard tactic of supporters of sentence syntax to claim that the very study of discourse is an unreasonable agenda so long as any problems remain outstanding from the study of sentence level syntax. This claim sometimes takes the form of challenges to functional grammar to find discourse correlates of specific syntactic phenomena (stated always, of course, in sentence terms). For example, we find Jerry Morgan asking the question how such well-known phenomena as Ross' constraints on variables could conceivably be explained in discourse terms (Morgan 1981). Indeed, how could the "extraposition" of the relative clause in such ordinary everyday sentences as:

"The woman died in 70,000 BC who invented the wheel,"

ever be accounted for if the structure of every sentence in the language had to have a functional explanation?

The same theme of the arbitrariness of the match between syntax and function is struck by other linguists who have confronted discourse linguistics from the perspective of sentence grammar; we can cite here Newmeyer's pronouncement of a so-called "functionalist fallacy" (Newmeyer 1983), the position that the lamination between structure and function will come unglued with the slightest bubble of failure--that it takes only one syntactic fact which is not susceptible of a functional explanation to bring down the whole precarious palace of functionalism. Sadock (1984) has endorsed the notion of a Functionalist Fallacy.

There are, it seems to me, both superficial and more profound responses to this argument. The simple one is to note that since both sentence grammarians and discourse linguists agree that their work is not done, it is highly premature to speak of any "syntactic facts" which are independent of function, just as in the absence of a complete theory of functionalism it is premature to claim that all structures have functional counterparts. It might also be legitimately claimed that so-called syntactic facts which do not appear at first sight to have a functional explana-

tion may indeed have one if they are studied seriously, that is, in real discourses. Thus in the particular example presented by Morgan, it could be argued that extraposition of relative clauses is indeed triggered by something in discourse, probably involving the relative salience of the main vs. the subordinate clause: extraposition always seems to mean that the discourse importance of the relative clause outranks that of the main clause; indeed it is the very absence of this skewing which perhaps accounts for something I always notice when I try this sentence out on people -- that it is judged to be a very bizarre way to say what the sentence is apparently trying to say.

Critics of "radical pragmatics", and "functional grammar", assume that they and those they oppose share a common view of language, that there is a pairing of autonomous (i.e., decontextualized) grammatical forms with "functions" (whatever they might be in the abstract), and that the only point of disagreement is whether these forms might be eventually derivable from "functions" or whether the forms must be described independently of "functions". I find a certain irony in such a use of the terms "function" and "functionalism", since the very restriction of the investigation to an artifically defined level of "sentences" seems to me to be quintessentially anti-functionalist. Be that as it may, I am concerned in this paper with the more fundamental problem of the assumptions underlying the critique, especially the assumption of an abstract, mentally represented rule system which is somehow implemented when we speak. It is an assumption which is very deeply entrenched in our field, and indeed is virtually an official dogma. Consider the following. A year or so ago, the President of the LSA, Victoria Fromkin, was asked by the editors of the Chronicle of Higher Education to submit a brief state-of-the-art report on linguistics, to be featured in a two-page spread of similar reports by representatives of other disciplines. Here's part of what Fromkin wrote:

> "In human speech production and comprehension, the speaker-hearer accesses not only the mentally represented language system, but also other cognitive systems and knowledge of the world." (Fromkin 1985: 13)

A whole world of unarticulated philosophical and other assumptions underlies this statement. It is a world whose traces are glimpsed through terminological windows such as "access", "mental", "representation", "language system", and "cognitive system". And that is only the intellectual aspect of the statement, for we must not forget that it is simultaneously a political statement also, a public inscription by the President of the Linguistic Society of the boundaries and objectives of the field of linguistics. But I am concerned more with the basic scenario, the one which provides for a logically prior -- perhaps eventually

even biologically prior -- linguistic system which is simultaneously present for all speakers and hearers, and which is a pre-requisite for the actual use of language. It is, in other words, the scenario that when we speak we refer to an abstract, mentally represented rule system, and that we in some sense "use" already available abstract structures and schemata.

The assumption, in other words, is that "grammar" (in the sense of the rules, constraints, and categories of the language attributed to the speaker) must be an object apart from the speaker and separated from the uses which the speaker may make of it. That kind of grammar is conventionally understood to consist of sets of rules which operate on fixed categories like nouns and verbs, specify the forms of additive categories like those of case, tense, transitivity, etc., and restrict the possible orders in which words can occur in a sentence. Discourse, the actual use of language, is held to be in some sense an "implementation" of these structures, or the way in which the abstract mental system possessed in its entirety by the speaker is realized in particular utterances.

Discourse linguistics has itself not always been immune to this kind of thinking. Here, too, one frequently encounters the same assumption of a dualistic structure in discourse, the notion that structure pre-exists discourse and that discourse is mimetically related to a logically prior abstract organization, formulated this time in terms of paragraphs, episodes, events, and other such macro-units. The problems of sentence grammar are not really alleviated by treating discourses as units manifesting a consistent internal structure, in other words effectively as extra-long sentences. We are still plagued by the problem of the ill-ness of fit between form and function. However consistently it can be predicted that a certain particle or aspectual form will function in a particular role in the discourse, it is rare that the reverse is the case--that a particular form is restricted to a single specifiable discourse role. To cut a very long story short, and thereby probably caricature the dilemma, some way out of the vicious circle of form-to-function-to-form is needed.

This is, then, roughly the context in which the term Emergent Grammar is being proposed. The term "emergent" itself I take from an essay by the cultural anthropologist James Clifford, but I have transferred it from its original context of "culture" to that of "grammar". Clifford remarks that "Culture is temporal, emergent, and disputed" (Clifford 1986:19). I believe the same is true of grammar, which like speech itself must be viewed as a real-time, social phenomenon, and therefore is temporal; its structure is always deferred, always in a process but never arriving, and therefore emergent; and since I can only choose a tiny fraction of data to describe, any decision I make about limiting my field of inquiry (for example in regard to the selection of texts, or the

privileging of the usage of a particular ethnic, class, age, or gender group) is very likely to be a political decision, to be against someone else's interests, and therefore disputed.

The notion of Emergent Grammar is meant to suggest that structure, or regularity, comes out of discourse and is shaped by discourse as much as it shapes discourse in an on-going process. Grammar is hence not to be understood as a pre-requisite for discourse, a prior possession attributable in identical form to both speaker and hearer. Its forms are not fixed templates, but are negotiable in face-to-face interaction in ways that reflect the individual speakers' past experience of these forms, and their assessment of the present context, including especially their interlocutors, whose experiences and assessments may be quite different. Moreover, the term Emergent Grammar points to a grammar which is not abstractly formulated and abstractly represented, but always anchored in the specific concrete form of an utterance.

The notion of emergence is a pregnant one. It is not intended to be a standard sense of origins or genealogy, not a historical question of "how" the grammar came to be the way it "is", but instead it takes the adjective emergent seriously as a continual movement towards structure, a postponement or "deferral" of structure, a view of structure as always provisional, always negotiable, and in fact as epiphenomenal, that is, at least as much an effect as a cause.

The assumption of Emergent Grammar imposes on the linguist a rather radically different view of the data base for linguistics. Although isolated, made-up clauses and sentences will have their uses, and indeed are often indispensible short-cuts to the study of grammar, the sources of these forms will have to be understood in a different way from that of the fabula of abstract rules and native speaker intuitions which have become part of our dogma. The linguist's task is in fact to study the whole range of repetition in discourse, and in doing so to seek out those regularities which promise interest as incipient sub-systems.

Structure, then, in this view is not an overarching set of abstract principles, but more a question of a spreading of systematicity from individual words, phrases, and small sets. I will illustrate what I mean by considering the example of the English indefinite article a/an. If we consider the history of this form, we find that from Indo-European times a cognate form has meant the simple numeral "one", singularity. This was still a common meaning of án in Old English. It is seen in such examples (from Bosworth and Toller 1898, sub án) as:

> God geworhte ænnan mannan, Adam, of láme "God created one man, Adam, out of clay"

It is also commonly used to introduce a new participant into a discourse:

án man hæfde twegen suna "A [certain] man had two sons"

Its use as a general indefinite article does not appear until later, so that in Old English án is not found in such contexts as:

Þeodric wæs Cristen "Theodoric was a Christian"

To take just these three functions of the predecessor of a/an in Old English, we find in modern English not a uniform, over-all weakening of the meaning, but rather a situation in which the weakened meanings and the older stronger meanings exist side-by-side. Thus we find, among other uses, the indefinite sense of a non-specific, classifying article:

My husband and I went to a showroom to buy a new car. After we had test-driven one, the salesman asked us ... (from Redbook)

But the specific, new-mention sense is also found:

They introduced me to a young woman [whose name was Ethel].
My husband and I went to a showroom to pick up a new car we had ordered. After we had test-driven it, the salesman asked us ...

Although these senses -- specific and non-specific -- have usually been taken as exhaustively dividing up the domain of the indefinite article, in fact several other uses also exist, such as "one and the same":

Birds of a feather flock together
They are all of a kind

and even "one":

A stitch in time saves nine
A penny saved is a penny earned
How much is that picture-frame? -- A dollar.

--where, by the way, British English would require "one dollar". It is significant that these meanings of "one" and "the same" are not replicable outside of the contexts -- and in some cases the specific wording -- of these formulas. Thus discourses like the following seem anomalous:

Linguists of a theory attend the same conferences.
What was left of the woods after they built the parking-lot?
-- A tree.

Evidently the meanings represented by the English "indefinite article" are not unified under one hyper-abstract function. Instead, an open ended set of small sub-systems has come into being, and the membership of new occurrences of forms with the indefinite article is not specifiable in advance, but is impromptu and negotiable. Even participants in the conversation may not "know" whether a specific new mention or a non-specific indefinite is intended until this has been worked out in the verbal interaction. Moreover, these subsystems are either innovating and spreading out from an earlier more restricted usage, or are contracting and being abandoned from an earlier wider use. We see this most clearly in the obviously traditioned, formulaic diction of proverbs like "birds of a feather", where "a feather" retains not only the older sense of "one and the same", but also the singular noun "feather" in the sense of plumage. The spread of the newer, indefinite-nonspecific function of a/an was described in Hopper and Martin 1985 (to appear).

The point about the retention of archaisms in proverbial language has of course often been made. But it has less often been noted that proverbial language is only an extreme case of repetition in discourse, at the other end of which are the morphological and syntactic repetitions some of which are called grammar; this point is made cogently by Lambrecht 1984. In other words, real live discourse abounds in all sorts of repetitions which have nothing to do with grammar as this is usually understood: for instance, idioms, proverbs, clichés, formulas, specialist phrases, transitions, openings, closures, favored clause types, and so on. There is no consistent level at which these regularities are statable. They are not necessarily "sentences", or "clauses", with recurrent internal structure, but they are often used holistically. Their boundaries may or may not coincide with the constituent boundaries of our grammatical descriptions: subject and predicate, noun phrase, prepositional phrase. Moreover, what is a formulaic expression in one context may not be in another; again, see Lambrecht 1980.

It has been noted before that to a very considerable extent everyday language is built up out of combinations of such prefabricated parts. Language is, in other words, to be viewed as a kind of pastiche, pasted together in an improvised way out of ready-made elements. Language is thus to be treated, in Wittgenstein's words, "from outside" (cf. Wittgenstein 1958: para. 120) -- not as governed by internalized mentally represented rules, but by pre-existent material with which discourses can be devised; cf. Staten 1984: 85-86, Smith 1978: 61-62 et pass. Evidently an entirely parallel way of viewing language is to be attributed to Jacques Derrida with his metaphor of language as "graft": new speech acts are "grafted onto" old ones and of course serve in turn as the stock onto which further new speech acts are grafted (cf. Culler 1982: 134-135). Becker's idea of "prior texts"

(e.g., Becker 1979: 244-245) is also crucial here: previous actual utterances form the basis of new utterances. Similar observations have been made by Bolinger, by Andrew Pawley, and others. It is this pre-patterned, pre-fabricated aspect of speech which accounts best for the characteristic of language for which no dualistic, double-tiered theory can provide an intuitively satisfying explanation: in natural discourse we compose and speak simultaneously (Smith 1978: 60). There is no room -- no need -- for mediation by mental structures. It is in this sense that, as Bolinger has pointed out (Bolinger 1976), speaking is more similar to remembering procedures and things than it is to following rules. It is a question of possessing a repertoire of strategies for building discourses and reaching into memory in order to improvise and assemble them. Grammar is now not to be seen as the only, or even the major, source of regularity, but instead grammar is what results when formulas are re-arranged, or dismantled and re-assembled, in different ways.

Looking at language this way involves a serious adjustment for the linguist, since we have developed the habit of seeing utterances in terms of a fixed framework of rules, and especially because we have been raised on the doctrine of the free generability of sentences, and the privileging of novelty over prior texts. Indeed, novelty is a prized virtue in our society altogether,[2] and we have many ways, some more subtle than others, of censuring perceived repetitions of others' behavior and an enormous vocabulary dealing with repetition (copying, imitation). Yet when one examines actual specimens of speech from the formulaic point of view the effect is a striking one, perhaps even a memorable one, in that it is then extremely difficult to revert to the old rule-governed syntactic view of discourse. Consider the following example from spoken English, just one of many examples from the Carterette and Jones corpus:

> Well no the problem is and this is what the psychologist has mentioned to me. these kids wont wont show any hope like the see you take a normal uh the average retarded child i mean the one who doesnt have any handicaps like blindness or deafness or something like that. he will improve a little bit. maybe a lot. it depends on how badly disturbed he is. but these people wont because theyre still going to no matter what happens theyre going to be living in a fantasy world. because theyre blind. and they have to imagine and they keep asking one question after the other and then nothing they say makes any sense and nothing is relevant to the situation. and it never will be because they well theres just such a sharp line of differentiation between the normal blind and then the emotionally disturbed blind. (Carterette and Jones 1974:422).

Even a cursory study of such passages reveals several different layers of regularity. The formulas are easily isolated. Note just a few of them:

> the problem is
> has mentioned to me
> these kids
> you take
> a little bit
> maybe a lot
> it depends on
> no matter what happens
> theyre still going to
> living in a fantasy world
> one question after another
> nothing they say makes any sense
> relevant to the situation
> sharp line of differentiation
> emotionally disturbed

--the last with its institutional and authoritarian subtext. It would in fact be difficult or impossible to draw the line between a formulaic and a non-formulaic expression; moreover, there are single words which could themselves be said to constitute formulas in this context, such as "disturbed", "normal". The stops and starts coincide with the boundaries of formulas, which are presented and modified or withdrawn or capitalized upon in an obvious interactional negotiation. Early in the paragraph, for example, the speaker clearly is about to say "the normal retarded child", but some way into the phrase realizes that for the uninitiated in this context it clashes with another formula, "the normal child", and launches into a second try, "the average retarded child", which also -- once said -- appears incongruous (cf. "the average child"), and finally is forced to abandon the search for an appropriate formula and move into a more specific level of discourse in which the properties encapsulated in the adjective "normal" are made explicit:

> these kids wont wont show any hope like thee see you take a normal uh the average retarded child i mean the one who doesnt have any handicaps like blindness or deafness or something like that.

It might be suggested that in this particular passage a sort of second hand "health care professional" jargon is manifest, in which mannerisms peculiar to a particular set of experts intrude. (We might note, for example, the pervasive "will/won't" in place of the present tense, right out of the H.C.P.'s manual!) Yet it would be difficult to find a passage about which some analogous

remark might not be made. The point is that all discourse is in some sense specialist discourse, moulded to the speaker's personality (i.e., personal history), the situation, and the topic. It is precisely the point about Emergent Grammar that such "heteroglossic" aspects of language necessarily become integral parts of the linguistic description, and are not set aside as a separate agenda irrelevant to the linguistic code and its structure.

Some of these phrases are incongruous when considered from a structural-grammar perspective. Consider the phrase beginning "You take a...", which would have to be analyzed as a subject-verb construction. Its actual function in the monolog is quite different from what one might predict of such a phrase on structural grounds. It is not a report ascribing an action of taking to a second person subject. It has in fact only one function, expressed holistically: to present a new hypothetical case into the discourse context. But this function cannot be readily integrated into a homogeneous grammatical system whose postulates obtain only at the level of isolated sentences and which starts with the perspective of a solitary ideal speaker.

The systematicity which linguists have come to expect in language still exists, of course, but in a more complex way. The linguistic system is now not to be seen as something complete and homogeneous, in which "exceptional" phenomena must be set aside as inconvenient irregularities, but as a growing together of disparate forms. This convergence takes place through lateral associations of real utterances. Similarities spread outwards from individual formulas, in ways that are motivated by a variety of factors, such as:

(i) phonological similarity (rhyme, assonance): he's likely to --> he's liable to
(ii) contextual similarity: I persuaded him to --> I convinced him to,

and other kinds of resonance.[3] They do not, however, merge into the kind of uniform grammar which would lead one to posit a uniform mental representation to subtend them.

2 Preferred Clauses

2.1 What I've been saying up to now has had the purpose of recontextualizing the notion of grammar--not to abolish it, but rather to suspend it with a view to isolating those regularities in discourse which we will agree to call emergent grammatical regularities. But as we have seen, the doctrine of Emergent Grammar assigns an entirely different status to grammar from what might be called A Priori Grammar:

(1) Regularity in discourse is of many different kinds, and is, since there is continually movement between one kind and another, moreover dynamic, not static in nature. Consequently no principled

line can be drawn between the emergent regularities designated to be "grammatical" and other regularities deemed to be "rhetorical", "formulaic", etc.

(2) Because grammar is always emergent but never present, it could be said that it never exists as such, but is always coming into being. There is, in other words, no "grammar" but only "grammaticization" -- movements toward structure which are often characterizable in typical ways. It goes without saying that many phenomena which we would agree to call grammatical are relatively stable and uniform. That is not in dispute. The point again is that any decision to limit the domain of grammar to just those phenomena which are relatively fixed and stable seems arbitrary.

(3) The major descriptive project of Emergent Grammar is to identify recurrent strategies for building discourses -- strategies which have intra-linguistic or inter-linguistic generality (or both) and which move toward grammaticalization along parallel lines.

In studying discourse with a view to describing emergent regularities, it is therefore most useful to begin by establishing frequently occurring, relatively stable clause types. A useful concept here is that of the "figure", suggested by Pete Becker. A figure is a phrase or clause which is highly standardized in its format and which permits substitution in a few restricted places. It has a rudimentary internal structure, but it is much closer to a formula than to freely generated "sentences". To the extent that discourse is not prefabricated, it consists for the most part of assemblages of a small number of such figures. Knud Lambrecht's notion of a "Preferred Clause Unit" seems to be quite similar, only Becker's concept of a "figure" permits a number of such types of clause unit to be reckoned with. Consider the following examples from Old English (Plummer 1898):

1. ond þa geascode he þone cyning "And then he found the king"
   lytle werode "with a small band of men"
   on wifcuþþe "a-wenching"
   on Merantune, "in Merton"
   ond hine þær berad, "and caught up with him there"
   ond þone bur utan be eode "and surrounded the hut outside"
   ær hine þa men onfunden "before the men were aware of him"
   þe mid þam kyninge wærun; "who were with the king"

2. þa ridon hie þider, "Then they rode up"
   ond his aldormon Osric, "and his alderman Osric"
   ond Wiferþ his þegn, "and his thane Wiferth"
   ond þa men "and the men"
   þe he be æftan him læfde ær, "which he left behind him earlier"
   ond þone æþeling on þære byrig metton "and met the prince in the villa"

þær se cyning ofslægen læg... "where the king lay slain"
"Then his alderman Osric, his thane Wiferth, and the men he had left back earlier, rode up, and found the Ætheling in the compound where the king lay slain..." (755 AD)

Here, a handy way of building up a discourse, such as a narrative, is to construct it by means of a verb-initial clause, usually preceded by a temporal adverb such as þa "then"; this clause typically elaborates a setting for an action, and may contain a number of lexical nouns introducing circumstances and participants:

ond þa geascode he þone cyning "And then he found the king"
lytle werode "with a small band of men"
on wifcuþþe "a-wenching"
on Merantune, "in Merton"

þa ridon hie þider, "Then they rode up"
ond his aldormon Osric, "and his alderman Osric"
ond Wiferþ his þegn, "and his thane Wiferth"
ond þa men "and the men"

It is followed by a succession of verb-final clauses, in which lexical NP's are minimally represented. These verb final clauses are built up of a particle such as ond "and", one or more initial pronouns unrestricted as to case, perhaps a lexical noun or adverb, and then the verb:

ond hine þær berad, "and caught up with him there"
ond þone bur utan be eode "and surrounded the hut outside"
ær hine þa men onfunden "before the men were aware of him"
þe mid þam kyninge wærun; "who were with the king"

It is not a question of an invariant hyperform from which different clauses are derived by processes of deletion and movement. Instead it seems that constructions spread outwards from a small nucleus and in turn form new nuclei (something like the metastasis of malignant cells, to coopt a metaphor of Bolinger's), and the resultant array of clauses are in "family resemblance" relationships to one another. Among the features of the figure is a tendency to avoid phrasing which would lead to multiple lexical noun participants in the same figure. So in (2), the multiple agents "they", "his alderman Osric", "his thane Wiferth" and "the men" are distributed over several phrases, and only one of them (hie "they") is retained in the figure. Lambrecht's work on Spoken French (e.g., Lambrecht, To Appear) shows how a large part of its grammar is invested in strategies for preserving the external form of what he calls the Preferred Clause Unit.

3 The Malay Ergative: An Emergent Construction.

I will conclude by considering some consequences of emergent grammar for morphology.

A major postulate, or working hypothesis, of Emergent Grammar is that the more useful a construction is, the more it will tend to become structuralized, in the sense of achieving cross-textual consistency, and serving as a basis for variation and extension. An elementary example of this is "Watkins' Law" (Watkins 1962: 93-96; Collinge 1985: 239-240). Calvert Watkins has noted that the third person singular of a paradigm forms the basis for new paradigms. The particular interest of Watkins' observation is his point that there are asymmetries among the persons, which in fact play quite different roles in discourse, having eventual consequences for the development of paradigms.

In Written Malay texts (those used in this study were Abdullah 1932, Abdullah 1928, both written in the 1840's), a highly frequent and favored clause type consists of a transitive verb with an enclitic ergative pronoun, followed by a simple lexical patient. This clause type is found in numerous types of context; the following exemplify narrative (3), and procedural (4) discourse; the verb + clitic complex is underlined:

(3) Hata maka di-panggil-nya aku masok ka dalam bilek "After that he summoned me into the room"
tempat ia menulis, "where he wrote"
maka di-tulis-nya sa keping surat; "and he wrote a letter;"
sa telah sudah, "when he had finished"
maka di-buka-nya petinya, "he opened his sea-chest"
di-ambil-nya tiga puloh ringgit, "took out thirty dollars"
di-unjokkan-nya surat serta wang itu, "handed [me] the letter and the money"

(4) Maka erti salang itu, "And [execution by] salang means"
di-ikat-nya kaki tangan orang itu, "they bind the man hand and foot"
lalu di-dudokkan-nya di-haluan perahu, "and put him in the bow of a boat"
di-kayohkan-nya kapada sa buah anak sungai. "and row him to one of the backwaters of the river"

The characteristic particles lalu and maka are closely comparable to the ond of Old English; the verb has a prefix di-, which serves as an agreement prefix with third person agents, and usually an enclitic -nya meaning "he, they (ergative)", giving a transitive clause beginning with di-V-nya "he, they V'ed (it)". Discourses may now be constructed by stringing together these transitive clauses, together with a few other quite easily characterizable types, substituting new nouns and verbs as needed, but generally keeping the basic shape of the figure intact.

The argument structure of these figures is very much along the lines of Du Bois' Preferred Argument Structure (Du Bois 1986). Agents are generally continuous as topics, and are either zeroed or represented simply by the enclitic nya. Lexical nouns are for the most part non-agents, such as patients, indirect objects, and obliques of various kinds. If there is a lexical agent, this has a preposition oleh, "by". But it will be noticed that lexical agents are relatively few and far between; some examples of them are:

(5) maka anak-nya perempuan itu pun hendak menangkap ikan itu, "and his daughter tried to pick up the fish"
sa-telah di-tangkap-nya dari ekur-nya, "when she took hold of it by its tail"
maka di-kebaskan oleh [ERG.] ikan itu tangan-nya, "the fish jolted her in the hand"

(6) maka anjing itu hendak pergi menchari ayer di-sungai itu, "and the dog went down to the river to find water,"
maka tiba-tiba di-sembar oleh [ERG] buaya "and was suddenly snapped up by a crocodile."

(7) Maka oleh [ERG] Tuan Farquhar "And Mr. Farquhar"
di-suroh-nya ambil bangkai buaya itu, "had them get the crocodile's body,"
di-gantong-nya di-pohon jawi-jawi "and he hung it from a fig-tree"

In example (5), there are two lexical nouns, an agent oleh ikan itu "by the fish", and an absolutive, tangan nya "her hand", and the verb is di-kebaskan "shock, jolt [her]", while the (human) patient is zero. In example (6), the agentive phrase is oleh buaya "by a crocodile", and the patient is zero, being continued from the previous clause; the verb is di-sembar "snap up [it]".

Transitive agents which are lexical nouns, such as buaya "crocodile" in (6) above, take the preposition oleh provided they are specific participants in the discourse. "Specific" usually means definite in the sense of having been referred to previously in the discourse; but the noun may be new, as here, and its individuation then depends on subsequent mentions in the discourse. Lexical agents which are neither old nor subsequently mentioned -- i.e., which do not qualify as specific participants in the discourse -- do not take oleh, as in:

(8) ada yang di-makan harimau "some were eaten by tigers"

where harimau "tiger" is the lexical agent of di-makan "eat (transitive)". These "indefinite, non-specific" nouns, then, behave like agentive pronouns in lacking the preposition and being placed immediately adjacent to the verb stem.

Now the presence of an ergative preposition before a lexical agent is explained by the Preferred Argument Structure. Lexical agents, being highly marked in discourse terms, must receive a special indicator, in this case the agentive preposition oleh. But indefinite-nonspecific lexical agents like harimau "tiger" in (8) should not be exempt from case marking. On the contrary, they are if anything even more highly marked as agents than definite-specific lexical agents. I return to this point in (iii) below.

Although most transitive agents are placed immediately after the verb in the preferred clause unit, the lexical transitive agent may also appear outside the clause, in very much the same way that we saw in Old English that "extra" NP's are placed outside the nuclear clause. Thus in the next example the ergative agent is placed outside the clause in front of the verb:

(9) Maka oleh [ERG] Tuan Farquhar "And Mr. Farquhar"
di-suroh-nya ambil bangkai buaya itu, "had them get the crocodile's body,"
di-gantong-nya di-pohon jawi-jawi "and he hung it from a fig-tree"

There are numerous examples of this "extraposition" of the ergative; it is especially found when a single lexical agent is shared by several subsequent clauses, as here. The ergative phrase then has a domain which extends over a number of clauses, and in fact has features of an independent clause in its own right.

Now I want to suggest that this is exactly what is happening--that the prepositional (lexical) ergative is emerging out of a "serial verb" construction which sometimes re-appears in its original clausal form, in much the same way that the English indefinite article sometimes appears in contexts where its earlier specific sense is reflected. My reasons for saying this are the following:

(i) That the "preposition" oleh is verbal in origin is indisputable. Compound forms of the verb still exist: beroleh "to obtain", oleh-oleh "something brought back as a gift", and the modal boleh "be able, be allowed to". They suggest a meaning like "acquire, achieve, manage, accomplish" which seems well within the typology of grammaticization of ergative prepositions out of verbs.

(ii) The possible independence of the agentive clause from the action clause is seen nicely in the next example (10), in which the verb is in the meng- prefixed form rather than the di- form ("passive") otherwise invariably found with the ergative:

(10)
Maka oleh Grandpre memberikan-lah surat itu ka tangan Enche Ha
and oleh [name] meng:give PCLE letter the to hand Mr. [name]
"And Grandpre handed the letter over to Mr. Ha."

The sense that the argument "Grandpre" is shared between two clauses in a serial fashion is striking.
(iii) As previously noted, the agent of the ergative with oleh is always definite or specific. In other words, the lexical agent with oleh retains characteristics of a topic/agent, and no doubt reflects an original definiteness constraint on agent/topics. By contrast, lexical agents which are non-specific were never appropriate topics of oleh, while non-lexical (i.e., pronominal) agents were always cliticized to the main verb.
(iv) When the ergative agent is separated from the action clause, the action clause usually also has the clitic agentive -nya, that is, the agent is referred to twice, as in example (9). This is exactly the same as when an agent is introduced in a previous separate clause and referred to again.

This is of course an example of grammaticization of the classical kind which has often been noticed in the literature. What I have wanted to stress here is the need to understand not only the formal process but the way in which that formal process emerges from a discourse context, in other words, is anchored in particular, concrete utterances. It is this "prior textuality" of the construction which explains why it has retained properties of a separate, external clause. What we see emerging, then, is a new strategy for permitting a lexical agent to be incorporated into a nuclear clause under certain contextual conditions, presumably involving differences of topic continuity.

4. I'm concluding this paper with some syllogisms, extrapolated from the first couple of pages of Radford's textbook on transformational syntax. References, with emphasis as in the original, are to Radford 1981:

> "What is a grammar of a language? Chomsky gives an essentially mentalist answer to this question: for him a grammar is a model (=systematic description) of those linguistic abilities of the native speaker of a language which enable him to speak and understand this language fluently. ... Thus a grammar of a language is a model of the linguistic competence of the fluent native speaker of the language." (p. 2)

> "...in the case of a sentence such as:
> (1) He thinks that John is wrong
> it is the native speaker's grammatical competence (his knowledge of the grammar of his language) which tells him that he cannot be interpreted as referring to the same person as John in (1)." (p. 3)

Some Syllogisms

[1A] A grammar of a language is a model of the linguistic competence of the fluent native speaker of the language.

[1B] A model is a systematic description.
THEREFORE:
[1C] A grammar of a language is a systematic description of the linguistic competence of the fluent native speaker of the language.

[2A] grammatical competence is the native speaker's knowledge of the grammar of his language.
[2B] (= [1C]) A grammar of a language is a systematic description of the linguistic competence of the fluent native speaker of the language.
THEREFORE:
[2C] grammatical competence is the native speaker's knowledge of a systematic description of the linguistic competence of the fluent native speaker of the language.

[3A] "...in the case of a sentence such as:
(1) He thinks that John is wrong
it is the native speaker's grammatical competence (his knowledge of the grammar of his language) which tells him that he cannot be interpreted as referring to the same person as John in (1)." (p. 3)
[3B] = [2C] grammatical competence is the native speaker's knowledge of a systematic description of the linguistic competence of the fluent native speaker of the language.
THEREFORE:
[3C] ... in the case of a sentence such as:
(1) He thinks that John is wrong
it is the native speaker's knowledge of a systematic description of the linguistic competence of a fluent native speaker of the language which tells him that he cannot be interpreted as referring to the same person as John in (1).

It will be seen that "grammar" begins life on page 2 in its theoretically correct style, as a "model" of the native speaker's "linguistic competence". But notice that by page 3, "grammar" is suddenly no longer a linguist's construct, a formal characterization of the abilities presumed to underlie the speaker's behavior, but the knowledge itself. It has gone from a linguist's theory to something the speaker possesses. One would not blame Radford, were it not that formal grammarians are quick to castigate discourse linguists for alleged "confusion" over the notion of "grammar", and often accuse them of not understanding this supposedly elementary concept.

There is no question that "grammar" is an infuriatingly elusive notion, and that it is very easy to have a clear idea about what "grammar" is in the sense of being able to give an abstract definition of it, but quite another to apply that definition consistently in practice. This asymmetry suggests

that the notion of grammar is intrinsically unstable and indeterminate, relative to the observer, to those involved in the speech situation, and to the particular set of phenomena being focused upon. It suggests also that we need to question the supposition of a mentally representated set of rules, and to set aside as well the idea in Fromkin's statement which I quoted earlier, that speakers possess an abstract linguistic system ready and waiting to be drawn upon -- "accessed"! -- in case they should ever need to speak.

Footnotes

[1]I would like to thank Sandy Thompson for written comments on the conference version of this paper. It goes without saying that numerous others have directly or indirectly influenced the paper, but its general debt to Sandy and to Pete Becker, Ranjit Chatterjee, Jack Du Bois, Barbara Fox, Talmy Givon, Knud Lambrecht, Larry Roberts, Deborah Tannen, and especially Dwight Bolinger, is surely both pervasive and obvious; none of them should be blamed for any errors or excesses in the use I have made of their ideas, and I apologize to them for not always having cited their published work when I might have.

[2]This was pointed out to me independently by Catherine Lutz and Deborah Tannen.

[3]Again, Derrida's proposal for a typology of "grafts" seems closely relevant here.

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English Derivational Morphology Without Added Syllables*

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It is a commonplace that morphologic differentiation of major word classes runs to two extremes in English. On the on.e hand, suffixal morphemes such as *-ment*, *-ness*, and *-ion* to mark nouns and *-ize*, *-ify*, and *-ate* to mark verbs allow the quick and clear differentiation of these two word classes. But the other extreme, that of a total lack of formal differentiation, is equally well represented in English by such classes as denominal verbs [*can* the peaches, *pocket* one's change, *roof* the house] and deverbal nouns [a common *scold*, a *lay-up*, the *lie* of a golf ball]. In fact, the lack of difference between corresponding nouns and verbs such as these led a recent writer on the subject (Lieber 1981:124) to abandon altogether possible derivational relations between members of such correspondences, thereby leaving such terms as "denominal verb" and "deverbal noun" with only notional importance, directionality having been lost with derivation.

This paper will propose an interpretation of some of what lies between the two extremes, in particular the interesting pairing of form that occurs between many nouns and verbs in English, as exemplified in (1):

(1) *believe, house, bathe, choose, expand, portray, implement, delegate, conduct, ump(ire), exam(ination).*

Each of the verbs in (1) has associated with it a noun of very close phonetic form: for *believe*, there is *belief*; for *expand*, *expanse*; for *conduct*, *conduct*, etc. In the interests of descriptive parsimony, I will call members of such pairings "twins". The purpose of this paper is to describe "twinning" as it relates to verbs and nouns, and to give the outlines of a hypothesis which will allow us to consider twinning as a normal component of category differentiation and of word formation processes in English.

Twinning has three salient features, the first of which could be considered definitional: twins occur when formal differentiation is accomplished without adding syllables for (in this case) either verb or noun. Such patterns could be considered a peculiarity in English, where the normal span for derivational morphemes is a syllable. Second, the several means for differentiating noun and verb follow easily stated schemata, and moreover are exceptionless—if there exists a means of differentiating verb from noun, that means will never differentiate noun from verb, the reverse. The third salient feature is that the effect of any of the means has a strong similarity to the effect of any other and thus, there can be seen at work a generalized strategy for differentiating verb-noun twins.[1]

There are four means of differentiation which we will examine: final obstruent voicing changes (as in *belief*, *believe*; *expanse*, *expand*), final low-stress vowel differences (*implement* ['ɪmpləmənt], ['ɪmpləˌment]), stress repositionings (*'conduct*, *con'duct*), and truncation possibilities (*exam* < *examination*, **exam* < *examine*). That is, we have examples of differentiation signalled at segmental level, at syllable level, at word level. Given this range of affected levels, a sufficiently perspicuous general statement covering the phenomena must rely on some very basic assumptions. The hypothesis which I will offer in this paper does not rely on particularly well-known assumptions and could be considered extreme. In outline it is simple to state: when differences are relevant, nouns and verbs differ in their basic prosodic makeup, each emphasizing stress elements like pitch, duration, and intensity differently. Our attention will thus be focused on such primitives as vowel

length, word length, stress levels, and vowel quality.

The rest of this paper is organized as follows: first, a survey of the classes and subclasses of twins which show the requisite kinds of differentiation. Second, there will be a short section on morphological conversion (Marchand 1960:293ff; Lieber 1981, chap 3), the multiple use in different word categories of word forms which are not marked for category change. Morphological conversion is normally invoked only when noun-verb (for example) twins are identical in form, but Lieber gives a persuasive account of how twins differing in stress placement (as in *import, torment, conduct*) should also be considered examples of conversion. Since this type of twinning defines one class of form-difference relevant here, it is possible that all of our classes have a conversion interpretation. Finally, we will conclude with a discussion of the kinds of explanation which might best describe the patterns of differentiation we have looked at. Two of these kinds of explanation are of historical importance: structural-derivational, as in Chomsky and Halle's discussion of *permit, torment,* and *survey* (p. 96), and rhythmic-hierarchical, as in Liberman and Prince 1977 et seq (well critiqued and extended in Hayes 1984). The third will be offered new here.

Stress repositionings. Central to the problem of twinning is the well-known phenomenon of stress repositioning or shifting; the following short list (SPE, p. 96) is typical of examples given when it is discussed:

(2) *transfer, permit, export, survey, protest, insert, progress, convict, suspect, torment, combine*

It is likely that this list does not represent as pure a sample as its authors intended: the underlined items are not necessarily pronounced differently as nouns and verbs, the forestressed noun pronunciation serving for both noun and verb. (There is also the oddness of William Powell's *Thin Man* pronunciation of *suspect* (n), which he gave with afterstress.)

However, no matter what neutralization takes place (and we can always find examples to replace the neutralizations), the following well-known generalization holds: if there is a stress-positioning difference in the pronunciation of nouns and verbs of Latin-derived bisyllabic prefix-stem compounds, then the noun has leftward stress, the verb rightward. Like all of the means of differentiation we will look at, the directionality is exceptionless; we simply do not find noun twins with primary stress further to the right than their corresponding verb twins.

The centrality of the stress-shift phenomenon derives from two important considerations. First, stress-shifting is structurally central to the general pattern: it represents differentiation at a level higher than final obstruent voicing changes (on the surface, a segmental difference) and presumably lower than truncation (word integrity not being violated); this central position should be exploited by any attempt at explaining the general pattern.

More immediately, however, it is the sheer number of examples of stress repositionings that attracts our attention. The number is admittedly not evident from (2) or the larger set which (2) is intended (I presume by all writers on the topic) to represent; these are, after all, a closed class of perhaps 100 twinned pairs. But the elements of the description "Latin-derived bisyllabic prefix-stem compounds" play no Boolean role in this twinning process; they are simply an accurate description for (2). We can change some of the descriptive elements and still observe twinning. We can, in fact, move from this small class to much larger ones by manipulating the description appropriately. Consider, for example, historical source:

(2') Non-Latin-derived bisyllabic prefix-stem compounds: *fore'see* (*'foresight*), *fore'go* (*'Forego* [the racehorse]) (Kenyon and Knott list 10 twin-pairs with *fore-*);

free vs bound morpheme used as stem:

(2'') Non-Latin-derived bisyllabic prefix-stem/word compounds: *mis-* (*call, play, deal, fire*), *dis-* (*card, mount*), *re-* (*play, call, hash, sell*);

and free vs bound morpheme used as prefix:

(2''') Non-Latin-derived bisyllabic (free)prefix- (free)stem compound: *over-* (and for some examples, *under-*) (*flow, hang, charge, lap, turn*).

What we are seeing here is a gradual movement from the mutually bound prefix-stem combinations in (2) through the singly bound examples with *fore-* (the stem already an independent word, though the stem-class is closed) *mis-*, *dis-*, and *re-* (the stem independent, the stem class open) to examples where *both* prefix and stem are also independent forms.

But we are also seeing a movement from the strict **word-level** organization of morphemes (modifier–head) to a **phrase-level** organization: the verbal prefix *over-* can have alternate expression as a preposition (*to overhang, to hang over; to overlook, to look over; to overflow, to flow over*). This possibility of word expression does not, however, diminish the possibility of twinning. If we allow the substitution of verb phrase for verb word in the case of the verb twin, we in fact enhance the possibility of twinning—the combination of the richness of syntactic patterning in verbs and their adjuncts and a corresponding heavy use of nominalizing stress to freeze those patterns in their verbal order makes stress repositioning an important word-forming process.

The sample of stress-based nouns in (3) gives some idea of the interactions of verb and noun via stress repositioning;

(3) A fuller spectrum of stress-based nouns:

telescopes:

(a) *coverall, spitfire, pinchpenny, scarecrow, pickupsticks, knownothing.*
(b) *come-on, putdown, flutterby* [› *butterfly*], *runaway, get-together.*
(c) *has-been, also-ran, say-so, know-how, what not.*
(d) *hand-me-downs, shoot-'em-ups, forget-me-not, know-it-all, pick-me-up.*
(e) *whatchamacallit, doohicky, thingummy, jobbydoo, gizmo.*

repetitives:

(f) *no no, dum-dum, muu-muu,* (vs. *pooh 'pooh*).

Each of these subclasses deserves some discussion. Telescopes, ((a)–(e)), a term I will use to describe all compactions of phrasal material into noun words, have various sources: (a) represents a pattern productive in Early Modern English (compare *pinchpenny* with *penny pincher*) with occasional new members today; (b), the telescoping of verb (whether transitive or intransitive) plus particle, is an almost unrestricted process; (c) shows some of the grammatical range which telescoping can apply to; (d) may show an interesting constraint on inclusion of object pronouns; (e) represents examples of noun-sounds you make when you can't think of the noun you wanted to say.

Both (e) and (f) strike me as important evidence about the sound pattern of nouns, (e) because of the agreement among the forms as to what the stress placement should be, no matter the source of the form (*whatchamacallit* is a telescoped *what you might/may call it*; the others are less transparent), and all serving to say "Noun!"; and (f), in which items have parts repeated without imputable direction (which 'no' is a copy of which in *no no*?) yet the nouns in (f) (as well as *tum-tum, tom-tom, dodo, boo-boo, lulu, yo-yo,* and *B.B.*) have leftward stress and *pooh pooh*, a verb, has rightward.

What is to be made of all this noun detail? For one thing, it should be obvious that word formation studies in English must reach beyond traditional endocentric considerations. Aronoff (1976), for instance, (*Word formation in generative grammar*), devoted little discussion to even the basic corpus of twinning and none at all to the phenomenon of telescoping, yet I think that the importance and range of both is plain. To restrict oneself to the study of suffixal morphology is to miss an essential aspect of English.

Second (and to close this section on stress), by including phrasal sources for nouns we have exposed an important assymetry. As long as we confined ourselves to (1) and (2), we were dealing with word—word interactions and could focus exclusively on stress position. But the data in (3) show that there are allied problems, stress position and syntactic level. The question is obvious: what is the relationship among nouns, leftward stress and potentially lower syntactic level?

Final syllable reductions: Of the three classes of twinning left to discuss, two explicitly involve the phonological reduction of the final syllable(s). The first contains words ending in *-ate* with antepenultimate stress, and polysyllables ending in *-ment*:

(4) Final low-stress vowel reductions:

-ate: *delegate, precipate, aspirate, initiate, syndicate.*

-ment: *implement, regiment, compliment, complement,experiment, segment, fragment.*

The differentiation here of verb and noun is once again well known: if there is a formal difference between them, the verb has a full, unreduced vowel in the final syllable; the noun, a reduced one: *experiment* [ɛkspérəmèɪnt] (v), *experiment* [ɛkspérəmənt] (n); *syndicate* [síndɪkèɪt] (v), *syndicate* [síndɪkət] (n).[2] In the section below on explanatory possibilities I will offer a suggestion as to why it is *-ate* and *-ment* which participate in this reduction; however, lest anyone assume that the process (as opposed to the classes which it affects) is closed, consider the two common pronunciations of *program*, [prógræm] and [prógrəm]; which is the noun and which the verb should be obvious.

Truncations: The second class of final syllable reduction involves actual loss of final syllables and involves a by now familiar but still curious assymetry: final syllables are lost from verbs only if they have been lost from corresponding nouns:

(5) Truncations:

(a) *detox*(*ification*), *ump*(*ire*), *ad*(*vertisement*), *crip*(*ple*).
exam(*ination*), *rehab*(*ilitation*), *demo*(*nstration*), *supe*(*rvisor*).
(b) *ref*(*eree*).
(c) *prep*(*are, -aration*), *recap*(*itulate, -itulation*).
(d) *veg*(*etate*), *veggies* (*vegetables*).

Examples in (5a) represent the most restrictive case: one is an ump, one does not ump; one buys space for an ad in the classified section, but does not ad for a housemaid, and so on. In (5b), *referee* and *ref* both seem to be verb and noun, but it is my intuition that *ref* as a verb is denominal (certainly consistent with the generalization). The cases in (5c) are problematic as to category source but meet the necessary conditions on truncation. The forms *veg* and *veggies*, while providing differing truncation outputs, provide them in correct historical order: *veg* is of recent origin; *veggies* has been used for years.

Reprise. Before going on to discuss our last class, final obstruent voicing changes, I would like to attempt a provisional interpretation of twinning: in what way are the three processes we have looked at alike in effect (as offered earlier in the paper)? We have one process which reduces final stress (through stress repositioning), another which reduces vowels in final syllables, and a third which elides final syllables in polysyllabic words, leaving only one or two initial syllables. I think that a fair description of the totality of these processes is that they serve to make nouns **phonetically less** than verbs. Only in the case of stress shifting might there be a question as to whether twins differ in length (is *import* (n) shorter than *import* (v)?) but here too we may infer agreement: first, the region of the word away from which stress is shifted is also the region affected by reductions and truncations, and second, a common effect of stress shift is to allow a reduction in syntactic rank of the output, i.e., a subordination.

But all of these processes range over words of more than one syllable; the last class we will examine is composed primarily of monosyllables, yet we will see that the differentiation which this twinning produces also allows a longer-shorter, less-more interpretation, even though the affectable span is so limited.

Final obstruent voicing: There are two subclasses of interest. The first, basically monosyllables ending in fricatives, is familiar to anyone who ever made up the pronunciation [rus] for the word *r-u-s-e* and later learned better. Unfortunately for those speakers, *r-u-s-e*, a noun, does not have a verb twin, while the nouns in (6)—models for [rus] —do:

(6) Final fricative voicing, nouns only:

/θ/ – /ð/	:	*bath, breath, teeth, wreath, sheath, cloth*
/f/ – /v/	:	*half, relief, shelf, thief, proof, grief, strife.*
/s/ – /z/	:	*use, excuse, abuse, house, advice, device, loss, choice, refuse, glass, price* (*prize*), *peace* (*appease*), *merchandise.*

This is intended to be representative of those nouns which pair with verbs through alternations of final fricative voicing. Unlike (2)-(5), whose twins exhibit productive synchronic possibilities, (6) contains nouns which have a seemingly active relationship with their corresponding verbs (*belief, proof, use, shelf*), those which can be recognized as probably having a formal relationship, once the verb candidate is pointed out (*glass, strife, serf, refuse*), and those for which a connection to the correct verb is evident only in etymological formulas in larger dictionaries (*peace, spouse, price*). In short, it would make little sense to concoct a synchronic statement relating noun and verb: the class is closed and has been for centuries (some people do not distinguish the two pronunciations of *merchandise*, voicing both cases).

However, no matter how tenuous the modern relation is or how ancient the split between noun and verb (Old English, Middle English, Old French, Latin) or how different the routes to the present have been (back formations, for

instance, or one form descending through Middle English, its mate borrowed into Early Modern English), the directionality in this voicing alternation is one-way: if a noun and verb differ only in the voicing of their final segment, in this case a fricative, the verb contains the voiced segment and the noun the voiceless. Because of the stability and simplicity of this assymetry, I would like to ignore here its historical complexities and consider instead the present-day linguistic consequences of the difference.

In doing so, we must first deal with the general question of closed syllables and the effects that changes of voicing of the closing segment cause. The primary effect is one of changes in length in the immediately preceding vowel: a syllable closed with a voiceless segment has a much shorter vowel than the analogous syllable closed with the corresponding voiced consonant. The figures in (7) represent the situation well: the vowel [i] was shorter by 37% in a voiceless environment; of all of Keller's vowel pairs, the least decrease was 19% for the vowel [au]. None of this is to say that the syllable itself is 37% or 19% shorter; in fact, because the more fortis voiceless segments are naturally longer than their voiced counterparts, there is a kind of compensating mechanism for overall syllable length, with the outcome that the syllables in the two cases are roughly equal in duration (David Stampe, p.c.).

(7) Measurements of selected vowel nuclei before [t], [d], and silence (#) (in centiseconds).

Vowel Nucleus	before [t]	before [d]	before #
ʊ	14	21	
u	19	27	35
e	20	25	
i	20	32	38
e	*22*	*31*	*37*
ai	25	34	42

from Keller, *Instrumental Articulatory Phonetics*, 1971, pg. 68.

There is thus an absolute correlation (at least in Keller's work, and presumably generalizable) between voiced consonants and vowel lengthening, voiceless consonants and vowel shortening; it is a tossup whether one or the other is the dominant factor in the category differentiation we are examining. In light of the other kinds of twinning we have looked at, I will take the position here that the voicing contrast provides the phonetic contextualization for vocalic effects, and that the latter are the true source of the differentiation.

Changes in vocalic length are a primary effect of final voicing changes, but not the only one. Differences in length provide opportunities for other processes, and these opportunites are rather fully exploited. There is, for example, the phenomenon of extended prosody in the case of the lengthened vowel. That is, not only is the vowel longer in these cases, but because the longer vowel abuts a voiced segment there is a longer voicing chain, with the result that the syllable can carry a correspondingly longer intonation contour. I have some anecdotal evidence that this might play a role in what we are investigating: I asked friends to pronounce the three words *bait*, *bade*, and *bay* to themselves as single-word declarative utterances and to arrange the words according to vowel length. Everyone agreed that *bait* had the shortest vowel, but there was near unanimous agreement that the vowel in *bade* was longer than the vowel in *bay*, a result that contradicts the figures in (7): there the open syllable vowel always is longer. Two explanations come to mind: one is that what was being perceived as length was in fact length of contour, and

thus there is an even greater prosodic differentiation in the twins which differ by voicing.

The second explanation is semi-prosodic, semi-segmental. In repeating these syllables to myself, I have noticed that one aspect of their pronunciation that I find myself giving attention to instead of vowel length is the tension needed to close the syllable [bed] and the corresponding lack of tension for [be]. The reversal of perceived duration for the two syllables may come from the perception of extra effort that this closure entails. The basis of the extra effort lies in the conflict between the airflow needed for voicing and the cessation of airflow entailed by oral stops. In light of this conflict, what is interesting about the alternations exhibited in (6) is that they are fricative-based; thus, at least some of the conflict inherent in final voicing is diminished, or put differently, the possibility for functional use of final voicing alternations is enhanced, since voiced fricatives allow more freely the interplay of voicing and closure.

Changes in vowel length lead to changes in vowel quality. One change, which seems to play no role here, involves the lax vowels with their weak centralized offglides that one can hear in slower speech. These offglides can be quite distinct before voiced consonants; less so or not at all before voiceless consonants: thus, [hɪ^{ə}d], [hɪt]; [kæ^{ə}d], [kæt]; [kɔ^{ə}d], [kɔt].

The more noticeable change in vowel quality is represented by the present-day treatment of the diphthongs /ai/ and /au/: before voiceless segments the nucleus is centralized, thus [hə^{I}t] versus [hʌ^{I}d]; [hʌ^{U}s] versus [hɑ^{U}z]. Presumably a centralized nucleus requires less tongue excursion than a lowered nucleus does, and hence less time for articulation.

Alveolar obstruents. This discussion of vocalic effects leads us to the second sub-class of noun-verb twins differing in final voicing. It is a much smaller subclass then (7), mostly Latinate and French in origin, has the same problems of derivational immediacy (*descend* and *descent* are no doubt actively related, and *rend* and *rent* are no doubt not) and of historical complexities, and is just as exceptionless with respect to voicing and category assignment:

(8) Nasal (+ dental obstruent)
  (a) *intend* (*intent*), *descend*, *extend*, *rend*.
  (b) *defend*, *respond*, *expand*.
  (c) *restrain*, *join*.
  Residue: *portend*, *portray*, *pretend*, *succeed*, *exceed*.

For the examples in (8) involving nasal clusters our discussion of vocalic changes has immediate value: as the treatment of /ai/ and /au/ suggests, the shortening and lengthening of vowels before voiceless and voiced obstruents can be viewed as a kind of measure of opportunity for complication—the less time given for vowel pronunciation, the fewer ancillary movements, segments, prosodies associatable with the vowel. Just so with nasal segments: before voiced [d], for example, full articulation of [n] is natural: *intend*, *rend*, etc, but before voiceless [t], little of the segmental articulation of [n] survives: *intent*, *rent*. The articulation of the nasal segment before voiced [d] is of course an event extended in time, parallel to the fuller [ɑ^{U}] and [ʌ^{I}] articulations of the discussion (and [n] can be, because of its voiced nature, a carrier of prosodies).

The examples in (8c) can be handled quite easily: verbs lack a voiced final obstruent, the nouns have a voiceless one, and the asymmetry is preserved.[3]

One might speculate that the mechanism which favors fricatives as the carriers of final voicing changes (instead of plain oral stops, for instance)

also favors nasal-obstruent clusters, the obstruent providing the voicing context and the nasal providing extra voicing harmony. On this account only *succeed-success* and its rhymes rely solely on the voicing distinction.[4]

Finally, there are examples in which more than one twinning process appears to have effected the differentiation of noun from verb: *portent* and *portend*, *refuse* and *refuse*, *pretense* (in one pronunciation) and *pretend*, *detox* (from *detoxification*), and *portrait* [pórtrət] and *portray* (an interesting example of three processes combining, though the vowel reduction necessary is only analogous to (3).

Reprise II: With final devoicing we have added a second kind of truncation to the list of twinning processes. The rather lengthy discussion was necessary because of the wealth of detail that voicing changes supply. Let us add that detail to what we already know about noun and verb twins:

(9) Nouns: shorter, less of relevant phonological material, less opportunity for prosody carrying, subordinate forms (word only), de-emphasis of final syllables.
Verbs: longer, prosody carrying potential, word and phrasal forms, final syllables intact.[5]

In short, twinned nouns differ from twinned verbs in ways that suggest a difference in attention to phonological strength or emphasis **in different parts of the respective forms**: earlier for nouns, later for verbs. In addition, noun forms have a better potential subordinate status and verb forms provide a better prosodic base. In our final sections we will draw these observations together by hypothesizing an elemental difference: that nouns and verbs (when the difference is relevant) are constructed out of only partially overlapping prosodic elements, and that it is the elements which are special to each form which determine the kinds of detail we see in (9).

Morphological conversion. The data we have looked at might lead a reader to conclude that what we are dealing with here is morphological conversion, that is, the multiple use of a lexeme in different major categories without corresponding category marking. The classic examples involve absolute phonetic identity in all uses (inflectional alternations not counted).

The phonetic identity criterion, however, is not absolute. Lieber 1981 used the early metrical work of Liberman and Prince 1977 to argue that noun-verb twins differing only by stress placement, as in (2), should also be viewed as examples of morphological conversion, the phonological difference being accounted for by rhythmic principles (Lieber 1981:132–4). Lieber's argument allows us to turn a nice phrase: most derivational morphology concerns **word forming** (formation); morphological conversion, in cases of near rather than total phonetic identity (what we have been calling twinning), concerns **word shaping**.

The difference between these components can be made plain if we consider the range of means in morphology for correlating differences of form with differences of category. There is at one extreme simple suppletion: no correlation of differences, merely the fact of difference. Of course, the arbitrariness of form that suppletion implies is tempered somewhat by unconscious systematicities, as has been shown by analyses like Cooper and Ross's "World Order" (1975) and Ross's later work on pairing, ordering, and sounding. At the other extreme is "absolute" morphological conversion, the criterion case for multiple use of a form. Here we might say that with the lack of difference in form can come an arbitrariness of direction: "source category" would have only notional, not formal, importance. Lying between these extremes are morphology, which I place nearer to suppletion, and

twinning, which I place nearer to "absolute" conversion. What distinguishes them is their role in formal part-whole relations: classical morphology, with its concatenations, groupings, fixings, is exactly the study of word-formation, of forming words out of parts of words. Consider now the title of this paper. The data discussed here all obey the formal constraint posed there. I suggest that the lack of added syllables and the categorizing effects that we have observed are one and the same fact. Even in those cases where it necessary to propose suffixal morphemes (see fn 3), the categorization continued as long as the syllable limit was held to. We might thus view normal syllabic morphology as providing a kind of "syllabic shell" around morphemic material with which it combines in word formation. When that shell is lacking, then other influences, not morphemic in nature, can play a shaping role on the words in question.

Explanatory possibilities. The complementarity of form that twinning produces suggests two basic approaches to explanation. On the one hand, we may view it as an example of ***complementary contextualizations,*** that is, where a candidate twin will be treated (or shaped) differently according to some factors of context. If in our case of verbs and nouns, verbs and nouns appear in consistently different contexts, forms susceptible to effects of context will likely show these effects. What is needed, of course, is a clear delineation of the respective contexts and a statement of their role in shaping differing forms. Contextual approaches have dominated analytical thinking in recent years, particularly those of the structural-derivational schools and those of the rhythmic-hierarchical school.

The other basic approach involves **complementary prototypes of form**, where a candidate twin varies in form as it matches the requirements of a basic formal pattern. While this approach will be favored here, it should be obvious that it will have to interact with contextual approaches, if only for the fine surface detail that they can provide.

Let us begin a summary comparison of these approaches by considering the largest class of twins, those involving stress shifts. In their discussion of *import,* etc. Chomsky and Halle derived the noun from the verb through appropriate bracketing and the operation of the phonological cycle. A contrasting analysis is due to Liberman and Prince (1977) in which neither noun nor verb is the derivational source for the other. Instead, they are phonologically identical in their underlying representation, the stress differences being a late addition, a part of what Lieber (p 134) calls "productive phonology."

Lieber never spells out what "productive phonology" is, but we can use the phrase to denote exactly the two approaches to twinning that we have isolated. Productive phonology can be the phonology of the interaction of a candidate twin and its phonological context, or the phonology of the matching of a candidate twin with its target form. How different, for example, is the phonological context of the typical verb from that of the typical noun, and what features of that context allow just those attributes of verbs we saw in (9): longer forms, final syllables intact (not reduced, destressed, or lost), prosody carrying potential? One observation we can make is that verbs have, far more than nouns do, phonological material abutting their final syllables, through inflections, clitics, and objects. I know of no case where the adjunction of phonological meterical promotes the retreat of stress from the site of adjunction; the rightward abutment of verbal adjuncts may thus promote the emphasis on integrity of the ends of verb twins.[6]

A similar argument for contextualized placement of stress in noun twins can be made if the phonological material at the front of nouns is considered: cliticized articles and other modifiers might promote the leftward placement of stress.[7] The question naturally arises as to whether the other attributes of

noun twins seen in (9) are to have a like source. In what follows I will present evidence that for nouns at least a consideration of formal patterns is essential for understanding the facts of (9), and that contextualization can be considered secondary.

Iambs and trochees. Recall an earlier (Reprise) question about the length of twins differing in stress placement: is *import* (n) in some sense shorter than *import* (v)? Given the other attributes of noun twins, one would expect the answer to somehow be "yes." But how does one measure? To begin, one might ask whether the stress patterns ˘ ´ and ´ ˘ are truly inverses of each other (as rhythmic principles might suggest); if they can be shown not to be, then perhaps we are dealing with variables beyond mere stress placement. The following excerpt from Hayes (1985) suggests that they in fact are not inverses, that instead forestress is of a basically different nature from afterstress.

> The Iambic-Trochaic distinction
>
> The general law of rhythm I will invoke is well known to psychologists: prominence contrasts based on duration lend themselves to iambic grouping, while prominence contrasts based on intensity lend themselves to trochaic grouping. To see what this means, consider a psychology experiment in which subjects listen to two extended sequences of "beeps." In one sequence, every other beep is louder; and in the other, every other beep is longer. The two sequences are schematized as follows:
>
> Intensity Contrast
>
> . . . x́ x x́ x x́ x x́ x x́ x x́ x x́ x x́ x x́ x . . .
>
> Durational Contrast
>
> . . . — - — - — - — - — - — - . . .
>
> Numerous experiments have shown that listeners can mentally group such stimuli into pairs. The pairing works as follows: if the priminence contrast is one of intensity, then the groupings are normally trochaic; that is they take the form [x́ x] [x́ x] [x́ x] etc. If the prominence contrast is one of duration, then iambic groupings are normally perceived, with the more prominent element occuring last: [- —] [- —] [- —]. This is apparently a well-established result in psychology. . .
>
> p 430.

In order to apply these results to our problem, we must assume that is is possible first, to treat a sequence of these grouped constituents paradigmatically, thereby abstracting units of the appropriate size and make-up, and second, to equate the as yet undifferentiated prominence (i.e., stress) which distinguishes twins with the specific type of prominence which the abstracted units manifest. The question of abstraction is a matter of faith, but the question of differences of prominence is merely unexplored: what we commonly call "stress" is composed of at least pitch, intensity, and duration, and there is no reason to exclude the possibility that these elements are combined differently in different environments.

For stress-shift twins, then there would be more than stress position to

differentiate them: nouns, with forestress, would in their ´ ˘ pattern be emphasizing intensity differences between their syllables, while verbs would be emphasizing duration differences.

For other aspects of the twinning process correlative interpretations can be made. Truncations may be favored for nouns because final syllables are **already** in a reduced form through their diminished intensity status. The telescoped nouns in (3) may be telescope-able just because of the compaction possibilities of duration-independent trochees. Finally, the compaction may be shown to be an elementary prosodic subordinating device, or, in short, an important word-forming process in English.

Footnotes

*I would like to thank Rich Rhodes and Pete Becker for support, encouragement and discussion.

[1]In the early 1970's this last feature of twinning would have been called a "conspiracy," an occasion when a group of linguistic tendencies could be seen to have parallel teleologies. Because the term has fallen into disuse I will forgo using it here. Readers interested in the idea should consult Kisseberth 1970, Pyle 1974 and Ross 1973.

[2]Adjectives in *-ate* also participate in these alternations: *precipitate, articulate, appropriate, etc.* I have chosen to ignore adjectives for this paper; all classes of twinning have either adjective-noun or adjective-verb twins, but except for examples in *-ate* they are few in number.

[3]It is of course the past participial *-t* which supplies the voicing contrast for most of (8).

[4]And possibly the vocalic change [i] - [ɛ], though there seems to be little *independent* use of vowels for twinning: for tense/lax only *tell/tale* and *sell/sale* are extant; notice that the vowel lengths are wrong. The lack of vowel twins (despite the opportunities that Keller's figures suggest) lead one to the conclusion that there is more than mere length differences involved in the voicing examples. What may be of equal importance is the laryngealization of vowels before voiceless consonants, a kind of vocalic truncation.

[5]Because of our concern with twinning and its extensions, we haven't been able to use Ross's (1973) clear statement about stress and category:

> The Leftward Ho! Conspiracy
>
> In English primary stress in nouns may be followed by a larger number of unstressed syllables than is the case for primary stress in verbs, and, similarly, stress may be retracted farther leftward in nouns than is possible in verbs; in other words, primary stress in English nouns is farther to the left than primary stress in English verbs.
>
> p 168-9.

[6]In this regard, both verbal *-ate* and *-ment* require an extra syllable in past tense and past participial forms; it is this kind of restriction which (if in great enought numbers) would best drive contextual statements.

[7]Adjunction effects are grist for the structural-derivational mill; output from the Rhythm Rule (Hayes 1984) would be grist for the rhythmic-hierarchical mill: *Cornéll, Còrnell hóckey; gòod-lóoking, gòod-looking life-guard.* Here it is the ***modifying*** word which is affected, not the head, certainly a shaping context for adjectives (*to excéss, èxcess bággage*).

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BAFFLING CASES:
A Case/Reference Analysis of Hopi Nominal Constructions

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0. Introduction

This paper begins with an eccentricity, a puzzling gap in the relative clause paradigm of Hopi, and concludes with a unified analysis of case inflection that accommodates all the nominal types of the language—simple NPs, relative clauses, sentential complements, and possessives.[1]

The clause-type involved in the gap I mentioned follows the pattern, *The boy the fox bit ran home.* Such sentences are considered ungrammatical in Third Mesa Hopi, which is the particular dialect of Hopi I'll be looking at here. In order to account for this peculiarity, we will need to look carefully at the forms of the relative clause that Hopi *does* allow—both the way they are constructed syntactically and the way they get marked morphologically. This pursuit will lead us into an examination of two crucial systems of Hopi grammar—Case and Obviation. Eventually we shall see that these are not separable systems on the surface of the language.

1. Case

As a springboard into the present analysis, we need to understand the traditional view of case assignment in Hopi. Briefly, Hopi distinguishes subjects from all other noun phrases in the sentence. Subjects are unmarked, or zero-marked, and their case is called nominative. Direct objects, objects of postpositions, and lexical possessors in possessive constructions are marked with a suffix, generally the morpheme /-t/ (pausal form /-ta/),[2] and their case is called accusative. (Later in this paper I will relabel this case 'oblique'.) The examples in (1) illustrate some of these possibilities:

(1a) teepko-t tiki-t, pi' mooro-t naqvi-y-at
ironwood-ACC cut-SS then burro-ACC ear-ACC-POSS

a'ani wivitiva.
greatly hit

[He] cut a piece of ironwood, and started to beat hard on the burro's ear(s).

(1b) wii+taqa, i-kwa,
old+man(NOM) my-grandfather(NOM)

sǒhǒp+coki-hoya-t aw mooro-t soma.
cottonwood+tree-DIM-ACC to burro-ACC tied

The old man, my grandfather, tied the burro to a cottonwood sapling.

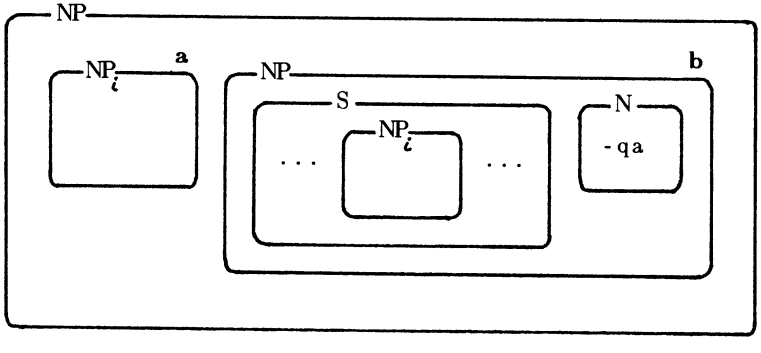
Complex nominals like relative clauses and sentential complements are also marked for case, and with these same affixes, but unfortunately, the simple principle outlined here won't stretch to cover these more complicated circumstances.

2. Mechanics and Preliminaries[3]

It will be useful to have a taxonomy for referring to the various patterns of the relative clause that are important to our discussion. Accordingly, I will distinguish four logical possibilities: **Subject/Subject** (S/S) relatives, where the subject of the main clause is coreferential with the subject of the embedded clause; **Subject/Object** (S/O), where the main clause subject is coreferential with an object of the relative; **Object/Subject** (O/S), where an object of the main clause is coreferential with the relative clause subject; and lastly, **Object/Object** (O/O), where objects of both main and embedded clauses are coreferential. In these terms, it is the Subject/Object-type relative clause that is forbidden by the Third Mesa grammar.

It would also help if we had some notion of the anatomy of the Hopi relative clause (Third Mesa's, anyway). The structure I am assuming for this analysis is an appositive construction, as shown in figure (2) below.

(2)



The overall spirit of this structure is compatible with the "pleonastic"

structure LaVerne Jeanne proposes in her 1978 dissertation, *Aspects of Hopi Grammar,* although the theoretical assumptions (or lack of them) behind it are quite different. For arguments against raising-type analyses for Hopi, or against the external-head analysis the Voegelins tried in 1975, your best bet is to look at chapter 3 of Jeanne's dissertation. Her coverage of these issues is quite detailed.

Lastly, a word on the identity of the suffix /-qa/. LaVerne Jeanne analyzes it as a "defective head noun," by which she means a bound noun that is invariant in form, yet fully referential and capable of inflection just like normal nouns. In my analysis, I simply treat it as a nominalizer—the derivational head of the b-phrase in the apposition. The fact that /-qa/ can be inflected for plurality I chalk up to agreement in number between the sister NPs of the appositive construction we've just looked at in (2).

3. Relative Clauses

Now let's look at some examples. Sentence (3) contains a Subject/Subject relative, sentence (4) an Object/Subject relative:

(3) "... pɨma hapi ɨng tɨɨva-to-qa-m
they(NOM) EMPH you(ACC) throw-PURP-NMZR-PL(NOM)
songqa pitɨ-ni."
surely arrive-FUT
"... for there are two who will yet come and try
to throw you off." (Malotki 1983:32)
(*lit:* They who really intend to throw you off will surely come.)

(4) nɨ' tiyo-'ya-t (pam) pakmɨmɨy-qa-t hoona.
I(NOM) boy-DIM-ACC he(NOM) is^crying-NMZR-ACC sent^home
I sent home the boy who is crying. (Jeanne 1978:196)

It would appear from this data that the case-marking of relative clauses is neatly parallel to the case-marking of simple noun phrases. In (3), the relative clause is in subject position in the matrix sentence, and the nominalizing head /-qa/ takes a ∅ for nominative case. In (4), the relative clause modifies a *non*-subject, and /-qa/ takes a /-t/ for accusative case.

However, if things were really as simple as that, we would be at a loss to account for the ungrammaticality of the Subject/Object relative in (5) (all examples drawn from Jeanne 1978 appear with my glosses, not hers):

(5) *mi' tiyo-'ya ni' (pi-t) wiva'ta-qa pakmimiya.
that boy-DIM(NOM) I(NOM) he-ACC hit-NMZR(NOM) is^crying
[..the boy that I hit is crying..] (Jeanne 1978:198)

Here, as in (3), the relative clause modifies the subject of the matrix, and /-qa/ appears to be properly marked by zero, as a good nominative should. Yet the sentence is bad. Clearly, then, there is something more than simple case-marking going on here.

Now let's take some more data on board. Sentences (6) and (7) offer examples of the Object/Object relative clause:

(6) talwipi [[coki-t]^{a} [tiyo aɳ wiip-qa-t]^{b}] mi'a.
lightning(NOM) tree-ACC boy(NOM) on climbed-NMZR-ACC struck
Lightning struck the tree that the boy climbed on.

(7) ni' [[taavo-t]^{a} [(ni') niina-qa-y]^{b}]. siskwa.
I(NOM) cottontail-ACC I(NOM) killed-NMZR-ACC skinned
I skinned the rabbit that I killed. (Jeanne 1978:244)

In (6), the clause nominalized by /-qa/ is inflected with the accusative suffix /-t/. The relative clause in (7), on the other hand, though every bit as accusative as (6), appears with the new suffix /-y/. The one significant difference between these sentences—the difference that must trigger the alternation between the /-t/ and /-y/ accusatives—is that of coreference or switch-reference between their matrix subjects and the subjects of their embedded relative clauses. Where switch-reference obtains, we get /-t/; where coreference obtains, we get /-y/.

The new data suggests that the inflection of nominalizations in /-qa/ (in this case, the relative clause) differs qualitatively from that of simple nouns. Earlier, we had observed the suffix /-t/ found on /-qa/ in the O/S relative in (4) and equated it with the /-t/ found on simple objects like *mooro-t* 'burro' in example (1). And we had likewise equated the zero or *absence* of marking on /-qa/ in the S/S relative in (3) with the zero-marking on the twin subjects *wii+taqa* 'old man' and *i-kwa* 'my grandfather' in (1). But now this desirable and very natural equation is threatened. In fact, it looks as if there are two phonologically (and for that matter, etymologically) identical suffixes, /-t^{1}/ and /-t^{2}/, one to signify switch-reference, the other to mark just case.

On the face of it, then, there must be two separate methods or modes of case assignment, one for nouns and one for nominalizations in /-qa/. This is the position LaVerne Jeanne (1978:286) settles on:

> The principles of QA-Case Assignment are to be kept rigidly distinct conceptually from the previous two rules [i.e., of "normal" NP-Case Assignment]. To be sure, QA-Case Assignment involves the *oblique endings* /-t/ and /-y/ [emphasis in original], but it does not involve their assignment in the sense of [NP-Case Assignment]. Rather, it is a special case of obviation.

This is not an unreasonable position to take.[4] And yet I find it unsatisfying. The partial intersection of these two processes, Case and Obviation—and the congruence of their morphology—remains as a puzzle.

4. The Case/Reference Hypothesis

I suggest that it is the genius of Hopi grammar to require that every nominal argument be formally classified as to the referential relationship that holds between itself and the matrix subject of its containing clause. A relationship of coreference will be termed **proximate**, one of switch-reference, **obviative**.[5] Thus a simple NP subject will always be classified as proximate with respect to itself, and a simple (nonreflexive) NP object will always be classified as obviative with respect to the subject of its clause.[6] In the case of *headed* constructions, like relative clauses or possessives, the tactics for establishing the referential status of a phrase are more complex, but are nonetheless based on the same principles.

With headed constructions, there is just one thing to keep in mind: a head noun always plays two roles in a sentence—one upstairs, as the representative head of an argument in its matrix clause, with responsibilities to the **matrix subject**; the other downstairs, as head of its own construction, with responsibilities to its **dependent**. The principle of obviation requires that such a phrase be marked to reflect this dual responsibility of its head. Accordingly, a noun phrase (say, the possessive 'Jed's uncle' in the sentence *Jake saw Jed's uncle)* will have an obviation value determined by the reference relation, proximate or obviative, that holds between its own dependent (here, the possessor, 'Jed'), and the matrix subject of the sentence as a whole (namely, 'Jake').

Where the head governs a **concrete** dependent, as 'uncle' governs 'Jed' in the example at hand, a reference reading is easily obtained: 'Jake' and 'Jed' are non-coreferential, so the construction would be obviative. But where the head governs an **abstract** dependent—like the embedded sentence governed by /-qa/ in a relative clause structure—the principle of obviation must "look inside" the dependent in order to find a concrete point of reference. It takes its reading from the subject of the embedded sentence itself—in other words, from the subject *of* the dependent. I'll refer to the NP that serves to characterize an abstract dependent as the **subordinate subject**. This reading is then compared to the subject of the matrix

sentence. As before, if the subjects "match", a value of proximate is given to the phrase in question, and if they don't, a value of obviative is awarded.

This process does not supplant case at all. Case proper is assigned as usual, by the expected governors (verbs, postpositions, possessed nouns) and according to the conventional principles: thus, clause subjects are still **nominative** and everything else is still **oblique** (formerly 'accusative'). Case and reference values come together and the outcome of their union is expressed by the case/reference (C/R) suffix appropriate to that particular combination of values. This is the gist of the Case/Reference hypothesis.

5. Simple Noun Phrases

Now, in order to get a quick feel for the way the hypothesis works, let's consider the following simple sentence:

(8) tiyo maana-t coocona.
boy{NOM, PRX} girl-{OBL, OBV} kissed
The boy kissed the girl.

The application of the case system is unexceptional, with *tiyo* 'boy' receiving nominative case as subject and *maana-t* 'girl', as direct object, receiving oblique case. At the same time, the reference system classifies *tiyo*, as matrix subject, proximate with respect to itself. By contrast, but in parallel fashion, the reference system classifies *maana-t* as obviative with respect to *tiyo*, the matrix subject.

The implication here, as I'm sure is obvious by now, is that the suffixes traditionally interpreted as strictly marking case—/-t/ for accusative and ∅ for nominative—are really more complex than that. Rather, /-t/ marks the cooccurrence of oblique case and obviative reference, and ∅ marks the cooccurrence of nominative case and proximate reference. (The two other logical possibilities, oblique/proximate and nominative/obviative, will be dealt with shortly.) My claim, then, is that there is no such thing as simple case-marking in Hopi: always a noun phrase is marked to represent this merger of case and reference.

6. Relatives Revisited

The next thing is to see how the analysis works on relative clauses. Examples (9-12) illustrate Subject/Subject, Object/Subject, and two types (proximate and obviative) of Object/Object relatives, respectively. I will discuss sentence (11) explicitly, although the methodology for derivation will naturally be the same for all four examples.

(9) [[hoonaw]^{a} [honani-t ŋi'a-qa]^{b}] waynima.
bear{NOM/PRX} badger-{OBL/OBV} caught-NMZR{NOM/PRX} ran^away
The bear that caught the badger ran away.

(10) ni' [[tiyo-t]^{a} [pakmimiy-qa-t]^{b}] hoona.
I{NOM/PRX} boy-{OBL/OBV} is^crying-NMZR-{OBL/OBV} sent^home
I sent home the boy who is crying.

(11) ni' [[taavo-t]^{a} [(ni') niina-qa-y]^{b}] siskwa.
I{NOM/PRX} cottontail-{OBL/OBV} I{NOM/PRX} killed-NMZR-{OBL/PRX} skinned
I skinned the rabbit that I killed. (Jeanne 1978:244)

(12) maana [[kiiyi-t]^{a} [ni' kwisiva-na-qa-t]^{b}] hiiko.
girl{NOM/PRX} water-{OBL/OBV} I{NOM/PRX} fetched-NMZR-{OBL/OBV} drank
The girl drank the water I fetched.

Look now in detail at sentence (11). First, since the appositional sisters, NP-a and NP-b, share direct object position in (11), they naturally are not "the subject" and so both receive oblique case. By the same principle, the two occurrences of first person *ni'* are both subjects in their own clauses and so receive nominative case. Both these subjects, of course, as subjects, are classified as proximate and thus carry the combined case/reference value of {NOM/PRX}, the combination realized by zero.[7] (But note that the subordinate *ni'* is optional in this setting.) The oblique NP-a, *taavo-t* 'cottontail', is obviative with respect to the matrix subject *ni'*, and so has a combined value of {OBL/OBV}, which is realized by the suffix /-t/. The classification of the b-phrase containing the relative clause, however, is more complicated. We've already established that NP-b is going to be oblique, so it's the reference value that we now must consider.

Remembering that a head noun plays a dual role in its sentence, and should be marked accordingly, we must check for a match or mismatch in reference between the dependent of /-qa/ and the matrix subject. The dependent here, of course, is abstract—an embedded sentence—so we look inside, to the subject *of* the dependent, and take a reference reading from the subordinate subject *ni'*—which of course compares favorably with the matrix subject *ni'*. And so a reference value of proximate falls on NP-b. Proximate reference combines with oblique case and the two find expression in the {OBL/PRX} suffix, /-y/.

And that is how the Case/Reference system handles relative clauses. In (11), as we have just seen, the outcome of the process is {OBL/PRX}. In

sentences (10) and (12), where case is oblique and reference—since matrix and subordinate subjects are different—is obviative, we find the {OBL/OBV} suffix /-t/ attached to /-qa/. And in sentence (9), where matrix and subordinate subjects are coreferential, /-qa/ takes the {NOM/PRX} marker, which is ∅.

It remains to be shown that this hypothesis, in addition to accounting for the clause patterns we *do* find, can provide a principled way of excluding Subject/Object relatives. Consider unlucky sentence (13) below:

(13)

*[[tiyo]^{a} [maana (pɨ-t) wɨva'ta-qa{-∅ / -y / -t}]^{b}] pakmɨmɨya

boy{NOM / PRX} girl{NOM / PRX} he-{OBL / OBV} hit-NMZR-{NOM / OBV} is^crying

(.. the boy whom the girl hit was crying..)

I think we can now see what is happening here. The appositive structure occupies subject position, so its sister constituents, NP-a and NP-b, naturally both receive nominative case. *tiyo* and *maana*, as clause subjects in their own right, are classified as proximate to themselves. Case and reference converge in a {NOM/PRX} combined value, and hence *tiyo* and *maana* take the ∅ ending—or would, if this sentence were any good.

The b-phrase, on the other hand, is a headed structure and, in keeping with the principles of the Case/Reference system, must be classified according to the condition of coreference between matrix and subordinate subjects. In the case of S/O relatives (excluding reflexives—see note 6), these subjects will *always* have different identities. And so the system brings together nominative case and obviative reference values for the b-phrase, which must be head-marked onto /-qa/. The only hitch is that there is no way, given the resources of Hopi morphosyntax, to make the sentence grammatical. As the various non-options of sentence (13) demonstrate, none of the case/reference affixes we have looked at are appropriate in {NOM/OBV} circumstances.

Given these observations, we can settle the morphological forms of the case/reference system into a defining paradigm, showing a gap where the {NOM/OBV} juxtaposition ought to be:

(14)

	NOM	OBL
PRX	∅	- y
OBV	*	- t

The constraint or filter we need to screen out S/O relative clauses in Third Mesa Hopi can now be represented succinctly, if somewhat informally (and with a little help from international road sign conventions), as follows:

(15)



The motivation for the constraint is obvious: since only subjects appear with nominative case, and all subjects by nature ought to "represent" themselves (in other words, be proximate), it's reasonable to want to rule out the possibility of subjects that do *not* represent themselves, but represent some other entity instead (in other words, subjects that are obviative). The *{NOM/OBV} combination is best viewed as a conflict of interests, which the grammar of Third Mesa Hopi simply throws out of court. Since this particular combination of case and reference values only arises in Subject/Object relatives, the constraint I've formulated does not affect any other nominal constructions but the one we want ruled out.

7. Sentential Complements

Certain verbs in Hopi (e.g., *naawakna* 'want', *navo'ti* 'know') take an embedded sentence as a complement. Like relative clauses, these complements are nominalized by /-qa/. Anatomically, sentential complements consist of just the b-phrase of diagram (2)—that is, an NP without an appositive left sister. (There is thus no call for number agreement on /-qa/, which explains why /-qa/, though pluralizable in other contexts, is never plural in sentences of this type.) Consider examples (16) and (17):

(16) nɨ' [nima-ni-qa-y] as naa-wakna.
I{NOM/PRX} go^home-FUT-NMZR-{OBL/PRX} IMPOT RFLX-want
I want to go home.

(17) nɨ' [pooko nima-ni-qa-t] as naa-wakna.
I{NOM/PRX} dog{NOM/PRX} go^home-FUT-NMZR-{OBL/OBV} IMPOT RFLX-want
I want the dog to go home.

Once we've made the adjustment for structure, the analysis is straightforward. The NPs derived by /-qa/ in these examples function as object complements of the matrix verbs in both sentences, and therefore will be

oblique in case. In its capacity as head, /-qa/ must be marked to reflect the differential in reference between its dependent and the matrix subject. Since the dependents are abstract, the subordinate subject is called on to "characterize" them in relation to the matrix subject. In the case of (16), these subjects are coreferential: both are *ni'* (although the subordinate *ni'* must be deleted), and the conjunction of proximate reference and oblique case is expressed as usual by /-y/. In (17), the subjects are *not* coreferential, and we accordingly find the {OBL/OBV} suffix, /-t/. And so the inflection of sentential complements follows the Case/Reference principles, too.

8. Possessives

The last nominal construction I'll discuss is the possessive. Consider the pair of examples in (18) and (19) below:

(18) taaqa [pooko-y-∅] caawina.
man{NOM/PRX} dog-{OBL/POSS}-{POSS/PRX} scared
The man$_i$ scared his$_i$ [own] dog.

(19) taaqa [maana-t pooko-y-at] caawina.
man{NOM/PRX} girl-{OBL/OBV} dog-{OBL/POSS}-{POSS/OBV} scared
The man$_i$ scared the girl's$_j$ dog.

In (19), where possessor and matrix subject are not coreferential, we see that the possessor NP *maana-t* has taken the {OBL/OBV} inflection appropriate to a non-coreferential argument in a non-subject position. Coreferential (proximate) third person possessors, however, never appear in the surface string, as (18) shows, so it's impossible to know what sort of inflection would surface in such cases. (The situation here is parallel to that of reflexive objects—see note 6—in that proximate possessors are non-distinct arguments in Langacker's sense.) As for the possessive construction as a whole, in both (18) and (19) the NP acts as object of the verb *caawina*, and in both instances it is oblique.

The principle of obviation operates no differently here than it does on any of the other nominal types we've discussed so far. Thus, the dependent is compared to the matrix subject and the outcome of the reading is posted as either obviative, as in (19), where *taaqa*$_i$ and *maana-t*$_j$ represent different identities; or proximate, as in (18), where *taaqa*$_i$ and the understood possessor refer to the same entity. At this point, however, the additional presence of the Possession relation (POSS) complicates the case/reference inflection in interesting ways that require special discussion.

The most obvious difference is that the possessee, head of the possessive

phrase, bears *two* suffixes, not one.[8] Witness *pooko-y-at* in (19). Furthermore, the complete absence of /-'at/ in (18) makes it clear that /-'at/ (pausal form /-'ati/) is not just a special suffix that head-marks possession exclusively: /-'at/, it turns out, codes reference information as well. This opens up the possibility that /-y/ and ∅, which we think we have recognized from other contexts, may have altered functions in the company of {POSS}. Before we try to solve the puzzle, though, we need to complete the paradigm of possession. Consider one last example, where the possessive construction, this time in subject position, is nominative in case:

(20) [taaqa-t pooko-∅-'at] waaya.
man{OBL/OBV} dog-{NOM/POSS}-{POSS/OBV} ran^away
The man's$_i$ dog$_j$ ran away.

This new data shows that /-y/ can't be a straight possession marker, either, anymore than /-'at/ can, since /-y/ can be absent, too.

In example (20), the dependent (*taaqa$_i$-t*) and the matrix subject (headed and characterized by *pooko$_j$-∅-'at*) are not coreferential. The reference value that the principles of obviation confer on the head is obviative—the same as in (19). In this light, then, notice how (19) and (20), both obviative, both carry the suffix /-'at/. Of course, (19) and (20) do differ in case. Conversely, (18) and (19), while differing in reference status, share the *same* case—oblique. And notice in turn that (18) and (19) both carry the suffix /-y/. Furthermore, /-y/ and /-'at/ are not mutually exclusive: *both* appear in (19). The form *pooko-y-at* tells us that these suffixes occupy different inflectional slots—/-y/ in the inner slot, /-'at/ in the outer. The inner slot is empty when case is nominative (example 20), whereas the outer slot is empty when reference is proximate (example 18).

The possessive construction may be simpler than relative or sentential complement constructions in having a concrete dependent, but in another crucial respect it is more complex. This complication is the presence, however characterized, of the semantic element of Possession itself, which of course is missing from the C/R configurations of other nominals. In addition to the standard mingling of case and reference relations, we now have the POSS relation to accommodate.

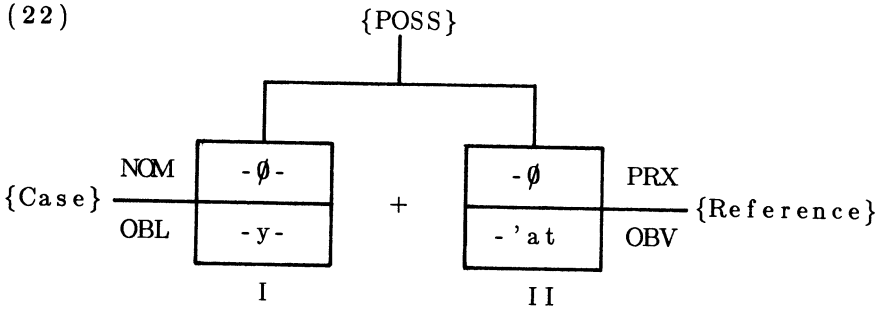
In a manner of speaking, the POSS relation actually triggers this peculiar mitosis of the familiar, one-slot inflectional ending. The table in (21) sums up the case/reference observations we've made so far, but with the POSS relation figured in:

(21)

	I					I	II	
NOM	/	POSS	/	OBV	:	-∅	-'at	(20)
OBL	/	POSS	/	OBV	:	-y	-'at	(19)
OBL	/	POSS	/	PRX	:	-y	-∅	(18)
				II				

I visualize the POSS relation as *intervening* somehow in the normal C/R process whereby case and reference values combine directly with each other. Instead, {POSS} disrupts this process. In (18), proximate reference does not combine with oblique case directly—the two values are intermediated by {POSS}. Similarly, what would seem to be a potentially calamitous interaction between obviative reference and nominative case in (20)—recall the *{NOM/OBV} constraint in (14)—is averted by the intervention of {POSS}. Thus the POSS relation splits the single position usually shared by case and reference, reacting with each by turns: with case, as manifested in the inner slot (I), and with reference, as manifested in the outer slot (II). The diagram in (22) represents this complex interaction paradigmatically:

(22)



At least some aspects of this paradigm begin to make sense if we think of the POSS relation as being, in large semantic terms, like the proximate relation of identity. After all, there is a conceptual, if not necessarily a physical or referential, relationship implicit in the bond of possession. And if we *do* regard the POSS relation as a form of proximacy, we should not be surprised to see that the interaction of {POSS} and nominative case corresponds to a ∅-marking in slot I, and that the interaction of {POSS} and oblique case corresponds to a /-y/.[9] These inflections, {NOM/POSS} and {OBL/POSS} respectively, are parallel to the ones we find on {NOM/PRX} and {OBL/PRX} nominals in normal, *non*-possessive situations where case and reference interact directly, unmediated by Possession.

If {POSS} supplants reference in slot I, it does the same to case in slot II. Nor is it difficult to see {POSS} in a case-like role, although 'genitive' is

the usual term.[10] So {POSS} has the ability to mimic both case *and* reference. The grammar exploits these talents as a way of maintaining its preference for portmanteau morphology that merges case and reference information simultaneously. At any rate, the Case/Reference hypothesis makes it possible to understand the split inflection on possessives in Hopi. Thus, as I have tried to show in this paper, a single set of general Case/Reference principles allows us to account for the inflection of all four of the nominal types we have examined—simple NPs, relative clauses, sentential complements, and possessives.

Notes

1. I owe thanks to Chuck Fillmore, Paul Kay, Carol Cantor, Leanne Hinton, Geoff Nunberg, and Orin Gensler for their help and comments on this and prior versions of this paper. Any mistakes you find are mine, not theirs.

2. The accusative suffix /-y/ (pausal form /-yɨ/) appears in place of the expected /-t/ on animate duals and plurals, and on a small set of singular nouns terminated by the augmentative suffix /-w(ɨ)/). The distinction between /-t/ and /-y/ (obviative vs. proximate reference, as we shall see) is thus neutralized in these circumstances. Of course, the distinction in the singular must still be accounted for.

3. Abbreviations not defined elsewhere in this paper are:

ACC = accusative	FUT = future	OBL = oblique	PRX = proximate
CAUS = causative	IMPOT = impotential	OBV = obviative	PURP = purposive
DIM = diminutive	NMZR = nominalizer	PL = plural	RFLX = reflexive
EMPH = emphatic	NOM = nominative	POSS = possession	SS = same-subject

4. It's not altogether clear to me whether these principles (NP- vs. QA-Case Assignment) persist as such into Jeanne's final analysis. But the dichotomy she sets up here between case and obviation *does* persist, and it is this dichotomy that I have tried to resolve.

5. I'm following the terminology of Jeanne and the Voegelins in this paper. The terms 'proximate' and 'obviative' are transplants into Uto-Aztecan from Algonkian. In U-A they relate to the phenomenon of Switch Reference (rather than to genuine third-person Obviation, as in Algonkian), and mean "same subject" (or co-reference) and "different subject" (switch-reference), respectively.

6. Reflexive and reciprocal objects never appear as surface lexical arguments in Hopi, and thereby constitute evidence neither for nor against this hypothesis, since we can't know what sort of inflection they would bear. Instead, reflexive arguments are indicated by a prefix, /naa-/, on the verb itself. Langacker (1976a, 1977b) discusses behavior of this type (which is pervasive in U-A languages), under the heading of "non-distinct argument phenomena". Coreference is a subset of non-distinctness.

7. Voegelin & Voegelin (1975:notes 5,8) attest to a generational difference within Third Mesa itself: in obviative sentential complements, their older consultants apparently require the subordinate subject to appear in oblique case. Jeanne (1978:258-9) discusses the fact that younger speakers have an option in this

circumstance: the subordinate subject may be {NOM/PRX}, which would be the "normal" situation as portrayed in the present paper; or the whole construction may appear as a kind of pseudo relative clause, with the subordinate subject surfacing in the matrix VP ("pleonastically", in Jeanne's terms) marked {OBL/OBV}, as if it were a regular matrix object. At the same time, a pronominal copy of the subject (happily re-marked as {NOM/PRX}) may optionally be left in its place—a fact indicating that the anomalously-marked subject is actually no longer *in* subject position.

8. In the oblique, where plurality of either possessor or possessee (or both) is involved, the suffix /-y/ is unaccountably copied at the end of the phrase. To wit, the form *pok-mi-y-ati-y* <dog-PL-{OBL/POSS}-{POSS/OBV}-COPY> "(their) dogs". I have found no explanation for this behavior.

9. And in fact, this parallelism is interesting from a diachronic perspective, as well (see Langacker 1979). Hopi /-y(i)/ started out as a third person possession marker, (P-UA *-yi) in the proto-language. The extension of the form to its modern accusative function occurred as an innovation in Northern UA, of which Hopi is a branch. Hopi retains the essence of the innovated *and* the original functions.

10. When {POSS} mimics case, though, the inflectional parallels with regular case/reference morphology fall through. There is no real connection in slot II between the {POSS/OBV} suffix /-'at(i)/ and the {OBL/OBV} suffix /-t(a)/, as the pausal forms reveal. I mention this to forestall anyone wondering about the further segmentability of /-'at/.

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The Grammatical Nature and Discourse Power of Demonstratives

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It might be assumed that the syntactic functions of demonstratives are universal: those that appear with nouns function as determiners or specifiers of the nouns, while those that occur alone function as pronouns. In many languages, however, the distribution of demonstratives in connected speech indicates that they are not functionally equivalent to those in languages like English.

For most languages, it is relatively easy to elicit structures that seem to parallel English demonstrative adjectives. Languages do vary in the number of demonstratives they contain (this/that/yonder) and the distinctions they encode (near speaker/ /near hearer, visible/invisible, etc.). Still, demonstrative constructions often appear equivalent across languages. The examples cited in the following discussion come from a single language, to avoid continual reorientation to new forms, but they were chosen to illustrate characteristics of a large set of areally and genetically unrelated languages. The Tuscarora sentences in 1) and 2) were provided by the late Elton Greene of Lewiston, New York, as translations of the accompanying English sentences.

1) *Kyè:ni:kã:* *uhsa?kã:* *?neh,* *se?tšĺ* *ukwè:neh.*
this knife too it is dull
'This knife is too dull.'

2) *Hè:nĺ:kã:* *áha:θ,* *yuhurã?ãhá:?nye?.*
that horse it is getting old
'That horse is getting older.'

Like their English counterparts, the demonstratives *kyè:nĺ:kã:* 'this/these' and *hè:nĺ:kã:* 'that/those' distinguish entities according to their distance from the speaker.

Demonstratives in languages like Tuscarora are surprisingly pervasive in spontaneous discourse, but they do not always precede nouns. They may follow them, as below. (These and all subsequent examples come from spontaneous connected speech.)

3) *Uhtšíhrã?* *kyè:nĺ:kã:,* *wahra?nã?tyã:?nã?,* *wahra?nù:ryáhnã?.*
bear this he tried he struggled
'The bear tried, he struggled.'

4) *Hé?thu* *yahwa?ã:ré?nã?w* *u?né:wa:k* *hè:nĺ:kã:* ...
there there she blew ghost that
'She blew (at) that ghost'

Like their English counterparts, these demonstratives can cooccur with numbers, but either order is possible.

5) *Hè:nî:kõ:* *nè:yá:kõ:* *wa?nyekyétkaht.*
those two of them they two chased me
'Those two chased me.'

6) *Há:ne?* *hésnõ:* *õ:tši,* *kyè:nî:kõ:* *ráha?r,*
this then one this he is a member
'At this time, he and a certain member of the tribe

kyè:nî:kõ: *kõ:ne?* *wè:yúhre:,* *wa?nyõ?nõ:ruh,*
this here it is amazing they two became friends
became very good friends'

Why would speakers choose to reverse the constituents of noun phrases?

A closer look at languages of this type reveals that demonstratives and associated nouns do not necessarily form syntactic units equivalent to their English counterparts. In English, common count nouns must be preceded by a specifier such as an article, possessive, or demonstrative in most contexts. Sentences like 7) are ungrammatical without them.

7) **Tidy gardener put hoe in shed.*

Multiple English specifiers do not cooccur before a noun. All perform the same syntactic function, so any one is sufficient.

8) **The my this tidy gardener put a your that hoe in the his that shed.*

There are many languages, however, that do not require specifiers before nouns.

9) *Eká:θ?ah* *wa?kú:ri:k.*
girl it bit her
'It bit a/the little girl.'

In some of these languages, optional definite markers may appear with nouns. Demonstratives can cooccur with these markers. Tuscarora has no exact equivalent to the English definite article, but an optional particle *ha?* precedes nouns and other constituents functioning as nominal arguments, and is often translated 'the'.

10) *Wahrà:rá:ku?* *(ha?)* *kátšyãh.*
he took out the fish
'He took out the fish.'

Demonstratives can appear both before and after *ha?.*

11) *Wahrahõ:réhsõ?* *kyè:nî:kõ:* *ha?* .. *katšíhtšhuh.*
he hollered this the it is crafty
'The fox hollered.'

12) *Neyuhskané:kə̃:t hésnə̃: ə̃kayə̃ʔnaʔrihə̃:tyə̃ʔ,*
it is peculiar then they will teach them
'They would teach them something peculiar,

ha? kyè:nɪ́:kə̃: akayeʔθhahθnə̃hstə̃hà:waʔk, ...
the this they would hold supreme power
how to have a certain supreme power.'

Demonstratives can also cooccur with possessed nouns.

13) *θatkáhthu kye:nɪ́:kə̃: kiʔrwə̃hθeh.*
watch this my tail
'Watch this my tail.'

In languages of this type, there is actually no internal motivation for assuming that the demonstratives function syntactically as determiners, since they are not necessary for grammaticality, and since the elements that might function as determiners all cooccur freely.

There is in fact little evidence that these demonstratives even form syntactic constituents with adjacent nouns. Unlike English determiners, demonstratives in these languages may be separated from adjacent nouns by intonation breaks. Note the pause and falling pitch between the demonstrative and noun in 14).

14) *Waʔtkahá:hi:θ hè:nɪ́:kə̃:, .. ruyaʔkwáhehr.*
it met it that he body carries
'It met that dinosaur.'

Such structures can exhibit a range of intonation patterns. Demonstratives may be separated from adjacent nouns by a long pause and fall in pitch as above, by a shorter pause and little pitch change, or by no discernible break at all. The variety does not indicate contrasting syntactic structure, although it may reflect different pragmatic conditions. It is similar to the range of intonation patterns that can accompany coordinate predicates in English. They may be clearly separated intonationally, as in 'She surreptitiously examined her bank statement, and regretfully decided that it was time to take action', or they may show little intonational separation at all, as in 'she sat down and cried'. The syntactic structure is the same.

There is little evidence within languages of this type that demonstratives even belong in two sharply separate categories: adjectives and pronouns. Demonstratives have the same forms whether nouns are present or not.

15) *Tə̃ihtrə̃hsi kyè:nɪ́:kə̃: (X)!*
'Untie this (X)!'

16) *Thaʔθahstá:wi:k hè:nɪ́:kə̃: (X)!*
'Leave that (X) alone!'

In fact, all demonstratives are referential in their own right, although they may be semantically coreferential with adjacent nouns. They are syntactically equivalent to the nouns, appositives, a fact that is consistent with their variable order. Note that in Tuscarora, a demonstrative and a coreferential nominal may both be preceded by *ha?*, the particle that precedes nominals.

17) *Wakkú:wanãh, ha? kyè:nɪ́:kõ: ha? kaye?tskà:rù:rõ?*
I am large the this the they are Tuscarora
'I am chief of these Tuscarora

kayetakrõ:tih.
they dwell (specific)
people here.'

The absence of separate demonstrative adjectives is especially typical of languages with obligatory pronominal affixes or clitics within verbs. Because the bound pronouns refer to core arguments, verbs in such languages can and often do function as complete clauses in themselves. Coreferent nouns, when present, do not bear precisely the same syntactic relationships to verbs that subject and direct object nouns bear in English; they function as appositives to the pronominal affixes (Mithun 1985). They also do not serve as heads of noun phrases, that is, hierarchical structures containing determiners and adjectives. (Such languages usually lack a special syntactic class of attributive adjectives as well.) The resulting 'flat' structures are a mark of what are sometimes termed nonconfigurational languages. (See among others Hale 1983 and Heath 1986.)

Since demonstratives in these languages do not perform obligatory syntactic functions in noun phrases, it might be assumed that they bear a light functional load. All of the sentences cited above would be syntactically grammatical without them. Their omission might seem to have little semantic effect: without the demonstrative, 17) would mean something like 'I am chief of the Tuscarora people'. Yet demonstratives are surprisingly pervasive in connected discourse in many types of languages. As their ubiquitousness attests, they perform crucial functions in the packaging of information.

Demonstratives serve a powerful orienting role. At the beginning of narratives, for example, proximate demonstratives ('this/these') are typically used to focus the attention of the audience on a specific event, time, place, or character. Mr. Greene often used demonstratives to open Tuscarora stories, as in 18).

18) *U:nãha? kõ:θ, aθõ yakwakõtɪ́:θ?ah,*
long ago used to when we were children
'Long ago, when we were children

yãkhita?nyã?θeh *kã:θ* *kyè:nɪ:kã:* *utkahryéhtšhreh,*
they visit us used to this story
people used to visit us, and they would

kayã?tkáhrih.
they tell
tell this story.'

Proximate demonstratives are typically used to focus the attention of the audience on a specific point in time. Another Tuscarora legend opened with general remarks on the stone giants who used to roam, killing people and animals. The speaker then drew the attention of the listeners to a particular time:

19) *U:nã* *hésnã:* *ã:tši* *thyahwáhe:t* *kyè:nɪ:kã:,*
now then one time this
'Now this one time,

kakutehyahrutšhrã?u?y *ne?skãhã:weh* ...
they crowd gathered large somewhere
a large crowd gathered somewhere ...'

Proximate demonstratives can provide spatial orientation. The passage in 20) comes from an historical account of the capture of an American general by the British during the war of 1812.

20) *Wa?kayã?nathã:re:t* *kyé:nɪ:kã:* *yuhwé?nu?*
they took him away this island
'They took him away and left him

yahwa?kayã?na?nɪ?rə?, *wa?kayã?na?nɪhtrã:t.*
they left him they tied him up
on this island, tied up.'

The center of action moves to the island at this point, where a group of Tuscaroras will make a daring rescue by canoe.

Major protagonists are frequently introduced with proximate demonstratives. Demonstratives are appropriate for this purpose, since they point out a center of interest. A proximate ('this/ these') is used because such protagonists establish the center of the action and our vantage point. The passsage in 21) comes from a legend about the slaying of a monster. We are first told that the Indians in the area were bothered by a dinosaur who went around destroying homes and killing people. Our attention is then directed to three people in particular with the proximate deictic 'these'.

21) *U:nã* *hésnã* *ã:tši* *thyawáhe:t,*
now then one time
'Now then one time,

kyè:nɪ́:kə̃: *áhsə̃:* *tikà:yá:kə̃* *wa?kayə̃tù:rá:the?.*
this three of them they went hunting
these three men went out hunting.'

Distal demonstratives ('that/those') are used to point out important entities at a distance from our vantage point. The men introduced above were enjoying themselves when all of a sudden, they heard something chasing them. They spied the dinosaur and began to run. The dinosaur caught the slowest runner and carried his body off. It then returned to chase the second. This runner is referred to by a distal demonstrative 'that'; the audience does not follow the victim, but watches from a distance.

22) *U:nə̃* *nektɪ́:ha?nə̃?t ...,* *wahrú:tkaht* *hè:nɪ́:kə̃:.*
now second it chased him that
'Now the second one, it chased that one.'

After the dinosaur has caught the second runner and carried the body off to store as food, our attention is drawn to the third runner. This time a proximate demonstrative 'this' is used. This third runner will assume center stage, and it is through his eyes that we will watch subsequent events.

23) *U:nə̃* *hé:snə̃:* *... ahsə̃ha?nə̃?t, ...* *kyè:nɪ́:kə̃:* *rarè:rúhe?,*
now then third this he's running
'Now then the third one, this one's running,

ù:nə̃ *nehruhwihsə̃hé:yṽ:.* *Rayə̃?né:ri:* *ə̃hrutáhki?w.*
now his strength is dead he knows it will catch him
he's already exhausted. He knows it will catch up to him.'

Once a vantage point has been established, other characters can be pointed out with respect to it. In the middle of the chase, a handsome young man appears, sent by the Holy Spirit, and asks what seems to be the trouble. After all is explained, he tells the hunter not to worry, and steps behind a tree. As the emissary moves away from the hunter (and us), he is designated by a distal demonstrative 'that'. As he returns, a proximate demonstrative 'this' is used.

24) *Yahwahrakwa?ná:θe:?* *hè:nɪ́:kə̃:* *rakwá:tihs,*
he went around that young man
'He went around behind the tree, that nice young man,

nahrayá:kə̃? *kyè:nɪ́:kə̃:,* *kə̃hreks ...* *yuyə̃hwiθna?nɪ́hrə̃?.*
he came out this lion it wing standing
and then (this one) came back out as a winged lion.'

Once characters or objects have been introduced, demonstratives can function to link subsequent mentions of them. As the winged lion goes to meet the aforementioned dinosaur, the dinosaur

is reidentified with a demonstrative, an overt reminder that this is the dinosaur we were discussing earlier.

14) *Wa?tkahá:hi:θ* *hè:nî:kã:*, .. *ruya?kwáhehr.*
it met it that he body carries
'It met that dinosaur.'

Such a device is particularly useful in a language without definite articles.

Demonstratives can be exploited to distinguish characters in narratives. The vantage point of the audience is usually that of the major protagonist, so he or she is consistently identified by a proximate demonstrative 'this (one)'. Other characters are referred to by a distal demonstrative 'that (one)'. During the fight between the nice young man (now a winged lion) and the dinosaur, our viewpoint is that of the young man. This fact serves to distinguish reference to the two adversaries during the fight.

25) *wè:yúhre:* *wa?nyúhtihr,* *kyè:nî:kã:* *wahrahtî:nãh,*
it is very they are even this he pleaded
'It was a very even fight, and so this one pleaded,

wahrãhrã? *naktî:rá:nheh.*
he said help me
he said, "Help me!"'.

Demonstratives are not limited to pointing out human beings, although of course people are more often foregrounded in narrative than objects. During a discussion of how to make cornbread, the speaker described how he would first go after ashes, then boil water, put the ashes in the kettle with the water, stir, add beans, add corn, boil until the skin peeled off of the kernels, wash the corn, grind it into meal, mix in beans, then add some boiling water to make dough. He then said:

26) *U:nã* *ãkyé:ti?* *kyè:nî:kã:* *ha?* *utá?nareh.*
now I'll make this the bread
'Now I'll make this bread.'

The demonstrative signals a return to the bread, still the primary topic of the discussion.

Demonstratives are not used every time an entity is referred to. They normally function to focus or refocus the attention of the audience. They appear at the beginning of episodes, when a new scene is set, or as our attention shifts back and forth between characters. They do not usually appear with each verb when a single character accomplishes a rapid, conceptually unified series of actions. The dinosaur's attack on the second hunter was described as in 27, for example:

27) *Wahruyé:nə̃:ʔ, θakáhaʔw, neʔskə̃hə̃:we yahwaʔká:yə̃ʔ,*
it caught him back it carried it somewhere it left it
'It caught him, carried him back, and left him somewhere.'

(The pronominal patient changes from masculine to neuter here because the dinosaur caught the hunter alive, but carried and stored only his body.) In this way, the demonstratives establish a certain rhythm in the flow of information.

In fact in many languages, demonstratives play a major role in manipulating the flow of information. In spontaneous spoken discourse, speakers tend to introduce only one significant new piece of information at a time. A newsworthy action, along with constituents identifying a new agent, patient, location, and time, are rarely introduced simultaneously within a single intonation unit. In languages where verbs contain bound pronouns, it is not unusual for intonation units to consist only of a single verb, or of a verb with a single argument or adverbial. A typical distribution of information over intonation units can be seen in 28), the opening of an anecdote. Each intonation unit, set off here on a different line, introduces a significant new piece of information.

28) *ə̃:tših .. thyahwáhe:t ..*
one time

kyè:nɨ́:kə̃: rə̃:kweh,
this man

rutáhskwayə̃ʔ ... ə̃: ... rʊ̀:nə̃:θkwarə̃ʔ ..,
he animal has toad

raʔehnə̃ʔkyeh kə̃ʔrə̃ʔ.
on his hand it's at home

'One time this man had a wart on his hand.'

The intonational structuring mirrors the conceptual structuring, with breaks between foci of attention.

Demonstratives can perform a crucial role in controlling the length of intonation units. Often demonstratives stand in for longer constituents, pointing to their expansions in preceding or following intonation units. The passage in 29), for example, opened the account cited earlier of the British-American war. Instead of introducing the war and the participants all at once, the speaker identified them in separate intonation units. The demonstrative in the third line signals the participation of those fighting and points to their fuller identification later.

29) *U:nə̃haʔ,*
long ago

kyè:nî:kə̃: *tikahà:wi?*
this so it carries

kyè:nî:kə̃: *kayə̃?rì:yus*
these they are fighting

kyè:nî:kə̃: *wahstə̃há:ka:?,*
these Boston inhabitants

tisnə̃? *kuráhku:, ...*
and British
'Long ago, when the Americans and the British were at war ...'

In this particular passage, the intonation units followed in rapid succession, but they were still prosodically distinct. The demonstratives do not indicate syntactic structure, but they do mark information structure. The passage would be syntactically grammatical without them, but they are useful in focussing our attention and in overtly linking the content of intonation units.

This use of demonstratives can also contribute to the efficient functioning of pragmatic word order. In languages where all core case relations are established within the verb, word order is not necessary for disambiguating syntactic relations (Mithun 1984, 1986). Instead, it functions pragmatically: constituents are ordered according to their descending order of newsworthiness. The most significant, unpredictable information appears early, followed by increasingly predictable and incidental information. Such a system is of course most efficient if the number of constituents is not excessive. Ordering ten words according to their relative contribution to the discourse is a more complex operation than ordering two or three, and the result is more difficult to interpret. When demonstratives stand in for elaborate constituents, they permit more effective use of pragmatic ordering. In the account of the British-American war, we are told that a certain General Porter befriended a Tuscarora man. This man had been taught special skills, in particular, the power of being invisible. When the general was captured by the British, that Tuscarora man decided to rescue him. When we are told of this, the verb, representing a new action, appears first. The hero, who has already been introduced, appears last. He is pointed out with a demonstrative, since our attention must shift back to him from the British and the general. The demonstrative also suggests a further identification of the man. We had not been told his name before.

30) *Yahwahráhrku?* *kyè:nî:kə̃:,*
he went there this

... tšáks *rayá:θə̃h.*
Obadiah he is named
'This man, whose name was Obadiah, left to go there.'

As the translation of 30) illustrates, structures involving demonstratives in such languages can resemble English relative clauses pragmatically. They provide further information about a particular entity. English 'that' has involved into a formal marker of syntactic dependence (unstressed θət), however. Demonstratives in structures like 30) serve only as semantic links, not syntactic ones. The clauses in which they appear are grammatically independent. The second line in 31) functions similarly as a parenthetical appositive. The demonstrative simply links the entities involved explicitly.

31) *U:nã hésnã: ú:ʔnãʔ ... θáheʔ,*
now then next bean

θáheʔ .. kyè:nɨ́:kã: tikatkwà:rà:yã́:t,
bean this it is red

nãyakwà:yéhra:k.
we'll mix in

'Now then beans, red beans, we'll mix in.'

Demonstratives may appear in any position in such constructions, or they may not appear at all.

Structures involving demonstratives in these languages can also resemble English complement constructions, at least superficially. Both proximate and distal demonstratives can stand in for clausal arguments.

32) *tisnãʔ twaʔkà:ye:ʔr kyè:nɨ́:kã:,*
and it happened this

.. *utšt̃ãhreh,*
stones

waʔkà:yãʔnãʔ.
they became

'and it happened that they turned into stones.'

There are no language-internal reasons to accord these constructions special syntactic status. The demonstratives may be stressed, and may be followed by falling pitch, unlike the English 'that' of complement constructions. The clauses they refer to are finite, containing full specification of core arguments and tense and aspect.

Demonstratives in many languages share basic lexical meanings with their English counterparts: they point out entities in terms of relative distance. They do not necessarily function in the same way, however. In English, demonstratives perform certain

language-specific syntactic functions. Demonstrative adjectives fill an obligatory syntactic role as specifiers in noun phrases; although speakers may choose which specifier they will use, they may not choose whether or not to use one. The English distal demonstrative pronoun *that* has developed into an overt marker of dependent syntactic structure in relative and complement clauses.

In languages like those described here, demonstratives have been grammaticized to the extent that they constitute a closed lexical class, but they are not required for syntactic grammaticality. They do not function as specifiers, nor do they mark syntactically dependent structures.

Whether demonstratives function as formal markers of syntactic structure or not, they can perform powerful roles in the organization of discourse: in establishing orientation, in tracking entities, and in controlling the flow of information. Some of these functions are particularly useful in languages that lack obligatory marking for definiteness, and in those characterized by morphologically complex words and pragmatic word ordering. When used in these ways, demonstratives constitute devices that speakers can exploit at will. They are evoked by textual considerations rather than by syntactic context. Some speakers may be more systematic in their use of them than others, and individual speakers may vary from one situation to the next in their exploitation of them, but they are pervasive, powerful tools. It is easy to overlook their function in the moulding of discourse if they are examined only in isolated, elicited sentences, rather than in spontaneous, connected speech.

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Taking: A Study in Lexical Network Theory

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Classical semantics is characterized in large measure by a set of constraints on adequacy: Semantic theory is to characterize such relations as synonymy, antonymy, and hyponymy for words, and entailment and contradiction for sentences. This set of initial constraints led to a view of semantics as a form of logic, and the insights that came out of it were very limited: notions of logical form, including predicate-argument structure, coreference, binding of variables, scope of logical operators, propositional functions, classical semantic roles, etc. The constraints themselves assumed a view of meaning as based on truth, which led to the application of model theory to linguistics (cf. Lakoff, 1968). Though a number of real insights have come from this approach, it has failed to account for most of the phenomena of natural language semantics.

Within the cognitive semantics tradition, the first major advance was Fillmore's frame semantics. Fillmore (1975, 1978, 1982, 1985) took seriously the conditions of adequacy proposed earlier by semantic field theorists, namely, to show the systematic relationships among the words in a given field (e.g., *buy, sell, cost, price, goods,* etc.). He argued that words had to be defined relative to schematic structures called frames (alternatively, schemas) and investigated many of the properties of those frames.

In succeeding years, Langacker (1987) and Talmy (1985) added a further major criterion for the adequacy of a semantic theory, namely, that generalizations involving the meanings of grammatical morphemes in the world's languages be describable. In applying this criterion, they demonstrated the need for incorporating into semantics the study of image-schemas and the relationships among them.

Most recently, the work of Brugman (1981, 1984) has explicated and applied a criterion of adequacy suggested in a variety of earlier works: The semantic relatedness criterion, which requires that all the regularities governing relationships among meanings be stateable in fully general terms. Brugman has applied this criterion to an account of the internal semantic structure of polysemous lexical items. The semantic relatedness criterion has led to a major line of research in contemporary semantics: The theory of lexical networks, which sees a lexical item as a network of minimally differing senses, with links of a small number of types.

The addition of these adequacy criteria for semantics has placed more *constraints* on what constitutes an adequate semantic analysis, and has led to a thorough rethinking of the nature of semantics itself. For example, the development of metaphor research over the past decade has been a result of the implicit application of the semantic relatedness criterion, and this has led to a theory of cognitive semantics in which abstract concepts are for the most part understood in terms of metaphorical mappings (see Lakoff and Johnson 1980). In short, the application of these criteria have led not merely to an understanding of the structure of the lexicon, but, more significantly, to a new semantic theory.

The study of the systematic relationships among the meanings of lexical items is therefore not mere lexicography. It is a theoretical endeavor of the most significant sort. It is this endeavor that lies behind much of the most interesting work in contemporary semantic theory, including the study of conceptual metaphor and metonymy, as well as the empirical investigation of image-schema structure through the study of image-schema transformations (see Lakoff, 1987, case study 2, and Lakoff and Brugman 1986). By studying precisely what the minimal differences are between the senses of lexical items,

we get important evidence for the nature of semantic theory, in addition to whatever we learn about the structure of the lexicon.

Some senses of *take*

The kind of lexical analysis we are undertaking is more than mere lexicography in another way as well. It seeks to understand *why* the same word or morpheme should be used to express different concepts.

We are currently investigating the relationships among the senses of common polysemous words. The word *take* is one of these. Consider the following sentences:

1. John took the book from Mary.
2. John took the book to Mary.
3. John took the book to Chicago.
4. John took Mary to the theater.
5. John took a whiff of the coffee.
6. John took a punch from Harry.
7. John took a punch at Harry.

Here are some of the questions that we will try to answer:

—How are the various senses of *take* related to one another, and which, if any, is central?
—Why is it that the subject can be stationary in 1 but must be moving in 2?
—Given the change of possession in 2, why need there be no change of possession in 3?
—4 implies that John attended the play, as well as Mary. But *John took Mary to class* does not imply that John took part in class. Why?
—Given that in 6, the directionality of action goes from Harry to John, and given that the verb *take* is used in both 6 and 7, why is that directionality reversed in 7?
—Why is *take* used to express perception, as in 5?

We will argue that sense 1 is central and that, given a detailed representation of the central sense, each of the other senses can be seen as a minimal variation either of the central sense or of another sense in the network. The resulting lexical network analysis will provide answers to all of the above questions.

Since this verb has a large number of related senses, it should be clear why the homonymy approach of simply making a list will not do. But before providing an idea of what a lexical network theory approach would be like, let us consider another popular approach to lexical representation, what we will refer to as the *abstractionist* mode of analysis, according to which a word that appears to have many senses really has a single, very general and very abstract sense.

The Abstractionist Approach

The strict abstractionist approach to the lexicon demands exactly one definition for each word. If a given word seems to have several senses, then the definition must be abstract enough to encompass all possible senses. For example, Bendix (1966) gives the following definitions for a set of verbs:

A takes B from C → C has B, and then A causes A to have B

C gives A B → C causes A to have B

A gets B	→	A changes to having B
C gets A B	→	some D has B, and then C causes A to have B
A has B	→	there is a relation between A and B

Bendix devotes an entire chapter to describing the kinds of relations that characterize *have*. He does not attempt to account for any metaphorical senses of the verbs, but as we shall see shortly, there are many common-place uses that fall outside the given definitions.

The problem with abstractionism is that it is very difficult to get the right definition without over- or undergeneralizing. Most English speakers agree that one can *take a look*, *take a whiff*, or *take a picture* (meaning 'to photograph'), but one cannot *take a stare*, *take a smell*, or *take a painting* (meaning 'to paint'). It is hard to imagine a general, abstract definition that could make just these distinctions.

Of course, saying that an abstract definition is "hard to imagine" does not rule it out completely, but we can show that particular definitions – including Bendix's – are incomplete. Bendix defines *take* in terms of *have*, in such a way that *take(x)* is acceptable only when *have(x)* is. But we can find counterexamples to this that hold regardless of how clever the definition of *have* is. For example, one can say *Reggie took the pitch* or *I took it in stride*, but it is not felicitous to describe the results of those events with the expressions *Reggie has the pitch* or *I have it in stride*. In general, we have found that an attempt to find a single simple sense for multiply polysemous words has been fruitless. Either it does not cover the cases, or it fails to differentiate them.

The Lexical Network Approach

From Brugman's work we know that there is at least one polysemous lexical item with a very large number of senses which is structured in terms of a network such that each sense is a *minimal variant* of some other sense. When we say that sense A is a minimal variant of sense B, we mean that, even though A and B may differ in many ways, all their differences boil down to a single difference from which the others can be predicted. Although we are by no means certain that all polysemy will ultimately be represented in terms of networks whose links are *single* differences, nonetheless we would like to investigate this idea and see where it fails.

So far, we have found that the links in lexical networks fall into the following types:

A. Image-schema transformation links: These are links given by natural relationships among image-schemas.

B. Metaphoric links: These are links that are established by metaphoric mappings that exist independently of the given lexical item.

C. Metonymic links: These are links that are established by metonymic mappings that exist independently of the given lexical items.

D. Frame-addition links: Here the minimal difference is the addition of a frame.

These link types enable us to represent a network of lexical senses in such a way as to eliminate redundancies, state generalizations across senses, and show exactly how polysemous senses are related to one another.

This paper proposes an addition to the theory of link types. We will suggest two additional types of minimal distinction links:

E. Semantic role differentiation links: There are cases where one sense identifies two semantic roles, and a minimally related sense distinguishes those roles.

F. Profile shift: These are cases where what is backgrounded in one sense is foregrounded in a minimally related sense.

Incidentally, lexical network theory theory does not dispute the claim that homonyms and abstractions may exist in certain cases, but its emphasis is on the analysis of polysemes. Within lexical network theory, homonyms and abstractions have less semantic structure than polysemes — and from our point of view, are therefore less interesting. From our point of view, a rich polyseme like *take* presents a challenging and interesting problem.

Take is interesting because it can express a basic action, because it is so common (among the 10 or 15 most frequently used verbs), because it is both a verb of motion and a verb of possession, because it has conventional metaphorical senses, and because it occurs in a great many idioms. Indeed, it is because *take* can express a basic action that it can be extended to many other uses — which take 14 pages to list in the OED. Dictionaries, of course, merely list senses. They do not provide representations in a form that allows one to state generalizations governing the relations among the senses, which is what we take to be our task.

Though we ultimately expect to provide a theory of the internal structure of semantic roles, for the purpose of this exposition we will follow the normal practice of considering them as primitives. Here is the list of semantic roles that we have found to occur in the various senses of *take*:

Participants:

A	agent: active actor or causer of an action
S	source: initially has the patient
R	recipient: receives the patient
P	patient: object acted upon or affected by the agent
I	instrument: used to transport the patient

Settings:

O	origin: location where patient started out
D	destination: location where patient ends up

We will begin with what we hypothesize to be the central sense of *take*, the *take* in *The baby took the toy from its mother*. As we shall see shortly, the other senses of *take* can be represented most economically in terms of minimal variation links if we do so. Moreover, speakers intuitively judge this sense to be the most basic, and dictionaries reflect this judgment.

Take-1: grab

Background Conditions: R is at D, P is at O, O ≠ D, S ≠ R, A = R.

ACT: A MOVES P ALONG A PATH FROM O TO D (WITH I)

CONDITION: DURING ACT, A PHYSICALLY CONTROLS P

DEFAULTS:

Result: A receives P
A is human
P = easily manipulated physical object
I = A's arm and hand
O = near A;
D = at A's body

Examples:

The baby took the toy from its mother
The baby took the toy from the table.

In this sense the agent is restricted to be a human who also plays the role of the recipient. In the typical case, the agent uses his hand as the instrument of movement by extending his arm, and the patient is a relatively small, light-weight physical object within grasping distance of the agent. Because the agent *is* the recipient, the agent need not be moving; only the patient need move. Moreover, the agent may take something and then drop it or lose it before actually having it firmly in his possession. Though this is possible, it is not the typical case. In the typical case, the agent actually receives the patient as the result of the taking. For this reason, we have listed the condition 'A receives P' as a default.

Take-2: take Patient to Recipient

LINKED TO: Take-1

DIFFERENCE: A ≠ R

Example: *the messenger took the book to Mary*

We assume as a hypothesis that the ACT condition is to be kept constant across senses whenever possible, since that is the most important part of the sense. Given this, take-2 can be seen as a minimal variant of take-1. The minimal difference is that in take-2 the agent is not the recipient. This entails that the movement from origin to destination is *locomotion* on the part of the agent, since the recipient is at the destination, the agent no longer is, and so the agent must move to the destination if the ACT condition is to be

kept constant. An additional consequence is that the agent's movement of the patient to the recipient is profiled.

This accounts for the following difference between take-1 and take-2: In *John took the book from Mary, took* profiles the movement of the book to the agent-recipient John. But in *John took the book to Mary, took* profiles the movement of the agent John to Mary's destination. The difference in selectional restrictions between take-1 and take-2 is also accounted for. Take-2 can select both source and recipient, while take-1 selects only source. The reason of course is that in take-1 the recipient is the agent, and agents are preferentially coded as subjects.

Take-3: take Patient to Destination

LINKED TO: Take-2

DIFFERENCE: SETTINGS ARE PROFILED

CONSEQUENCES: S AND R ARE OPTIONAL; RESULT IS OPTIONAL.

Examples:

I took the book home.
I took one suitcase to Bali.
Take a cookie with you.

Since participants rather than settings are normally profiled, the source and recipient are part of the profile of take-2, while the origin and destination are backgrounded as settings usually are. Take-3 is a minimal variant on take-2 in which the settings (origin and destination) are profiled, and consequently the source and recipient are backgrounded. This is reflected in the syntax, where the origin and destination rather than source and recipient are coded. Thus, *John took the book to Mary* is an instance of sense 2, while *John took the book to Chicago* is an instance of sense 3. When a setting is profiled, it is because the participant associated with that setting is either absent or unimportant. For this reason, it follows that the source and recipient are optional in sense 3, as is the result. Thus, in *John took the book to Chicago*, he may or may not have taken it from some source and he may or may not have taken it to some recipient.

Let us now turn to the senses of *take* in *I took a punch at John* and *I took a punch from John.*

Take-4: take action at Patient

LINKED TO: Take-2

DIFFERENCE: THE METAPHOR THAT APPLYING FORCE IS TRANSFERRING AN OBJECT

Example: *I took a punch at him*

Take-5: take action from agent

LINKED TO: Take-4

DIFFERENCE: RESULT IS PROFILED

CONSEQUENCE: R IS SUBJECT

Example: *I took a punch from him*

Take-4 is a minimal variant of take-2, which is a transfer of a patient by an agent to a recipient. The relation between take-2 and take-4 is metaphorical. In the metaphor, a quick, forceful action is understood as an object delivered by the agent to the patient.

Source domain: taking
Target domain: performing a quick forceful action

Agent → agent
Patient → quick, forceful action
Recipient → patient

Notice that the patient in the target domain (e.g., punching) is the recipient in the source domain (taking), while the action in the target domain is the source domain patient. Since there is a patient in both source and target domains, and since they are not in a one-to-one correspondence, it is important not to confuse them. With respect to the syntax, it is the source domain semantic roles (the ones associated with taking) that are relevant. Thus, *punch*, the action that corresponds to the source domain patient, is the direct object. This aspect of the syntax is a predictable consequence of having such a metaphorical link.

Another thing that is predicted is the use of *at* as opposed to *to*. In general, *at* is used instead of *to* when a goal is not necessarily reached. This is part of the meaning of sense 4, which is why *at* is used. The reason it is part of the meaning of sense-4 is as follows: In take-2, as in take-1, the result condition that R receives P is optional, since defaults by their very nature are optional. In take-1 and take-2, the preposition *to* is used since the patient reaches the destination setting, even though there may or may not be any receiving by a recipient located in that setting. When you are delivering an object, the difference usually doesn't matter; if it reaches the neighborhood of the recipient, that is good enough, since things in his immediate neighborhood are still in his control. But with a punch it is a different matter. Getting close isn't good enough. Unless the punch is

received, the metaphorical patient, the punch, doesn't reach its destination. But it is not guaranteed that the punch reach its destination, since the reception condition is optional.

Take-5 differs from take-4 in that the result is profiled, and as a consequence is obligatory instead of optional: the punch is definitely received. The difference in profiling leads to a syntactic difference. Since the recipient is profiled while the agent is backgrounded, the recipient is subject.

The next sense of *take* we will consider is that of *Max took Sadie to the theater.* This sense of *take* is intimately related to the sense of *go* in *Sadie went to the theater.* Such a sentence involves a metonymy — when we say she went to the theater, we normally mean that she not only went there, but that she did what a member of the audience typically does at the theater. That is, the going there part of the scenario is metonymically standing for the entire scenario.

The precise characterization of this metonymy is somewhat complex. Consider first the range of possible examples:

-Harry went to prison.
-Max went to work.
-Sam went to a restaurant.
-Irv went to the store.
-Maxine went to church.
-Sadie went to the doctor.
-Ron went to the bank.
-Mark went to class.

In each of these cases, there is a destination, D, which is a public establishment, and a conventional activity with a conventional purpose, C, which takes place there. In each case, going to D stands metonymically for doing C. Let us call this the Going-to-D Schema.

The Going-to-D Schema

C = a conventional activity with a conventional purpose.
D = public establishment where C takes place.

METONYMY: Going to D stands for doing C.

The sense of *take* in *Sam took Sadie to the theater* involves the Going-to-D schema. But it involves a restricted version of it. In the following cases,

-John took Mary to the restaurant.
-Mark took Suzie to the concert.
-Sam took his son to the ballgame.

the agents (John, Mark, and Sam) are all taking part in the activity C.

However, in cases like

-Max took Sadie to the doctor.
-Sam took Molly to the bank.
-Harry took his son to class.

there is no implication that the agent is taking part in the activity that normally takes place at the destination. In these cases, the Going-to-D Schema is not invoked for the agent. What distinguishes the first set of cases from the second is that, in the first set, C is a recreational activity, while in the second set, it is not. Thus, we can represent the sense of *take* in the first set of examples as follows:

Take-6: take to the movies

LINKED TO: take-3

DIFFERENCE: ADD Going-to-D Schema

RESTRICTIONS:

C is recreational.
P is human.

CONSEQUENCE: A doesn't *have* P in the sense of possession, but remains in charge of P.

The tricky part of this account is the notion "in charge of". Thus, *John took Mary to a restaurant* could be true in this sense even if he was not in charge of transporting her there. So far as we can tell, the notion "in charge of" is simply vague and varies a great deal from case to case.

Let us turn now to expressions such as *take a whiff, take a sniff, take a look, take a glance, take a glimpse, take a taste,* etc. We need to account for the relationship between *take* in these expressions and some other more basic sense of *take*. We also need to describe what *take* means here, and why it is *take* that is used in these cases. We also need to explain why such seemingly parallel examples as **take a stare*, **take a leer*, etc. are ill-formed.

The usual account of these cases is no account at all — it is just a list of paraphrases, with no description of the semantics of *take* in these cases. While we do not claim that the cases that occur are completely predictable, it appears that *take* in such cases is a metaphorical use of *take-1*, which is a special case of the very general metaphor PERCEIVING IS RECEIVING, according to which perception is the *reception* or *taking in* of

sense impressions. Briefly, the metaphorical mapping is of the following form:

Source Domain: receiving
Target Domain: perceiving

Patient → Percept
Agent/Recipient → Perceiver
Instrument → Sense organ
Receiving → Perceiving
Patient moves to Recipient → Percept moves to perceiver
Recipient has Patient + Patient is available for Recipient's use
→ Perceiver has percept available for use

This metaphor interacts with a general process in English by which a perfective action (that is, a completed action taken as a bounded unit) is nominalized, as in the case of *a look, a sniff, a taste* etc. What is special about this sense, is that it includes the metonymy that an act of forming a percept stands for the percept. It is the percept that is "taken in." Thus, in *take a look*, is an action of perceiving, which is metonymically mapped onto the corresponding percept. By the general metaphor of perception-as-reception, the percept is a patient which an agent/recipient "takes" in the sense of *take-1*.

This analysis answers a number of questions:

—Why are the acts of perceiving typically short ones (peeks, whiffs, etc.)? Because this sense is linked to take-1, where the default patient is a small physical object. Under the metaphorical mapping, the size of the physical object is mapped onto the duration of the action, yielding short actions in the default case, though still allowing for non-default cases like taking a long look.

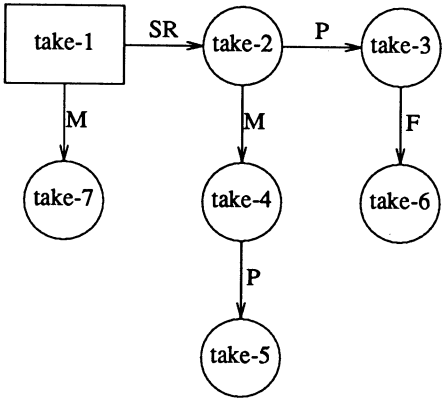
—Why doesn't **take a stare* occur? Because the nominalization process only applies to perfective actions, and *stare* is inherently imperfective.

—Why is the source coded with *of* instead of *from*? Take-1 has a special case in which the source is partitive rather than locative; in this case *of* is used to code that source. For example, in *take a slice of the roastbeef on the table*, the roastbeef is the whole of which the slice is part. Similarly, in *take a whiff of this roastbeef*, the whiff is metaphorically a part of the source.

Take-7: Take a glance at
LINKED TO: Take-1
DIFFERENCE: THE METAPHOR THAT PERCEIVING IS RECEIVING

These seven senses taken together form a network with the following link-types and shape:

1 to 2: semantic role differentiation (SR)
2 to 3: profile shift (P)
2 to 4: metaphor (M)
4 to 5: profile shift (P)
3 to 6: frame addition (F)
1 to 7: metaphor (M)



Conclusion

What we have just seen is that it is not an arbitrary fact that the same word *take* is used in all these seven senses. There are generalizations governing the relationships among these senses, and lexical network representations using the theory of minimal differences can account for them. The difference between a network structure and a list is critical here. There are not just some random similarities and differences among the senses. Rather, the differences are minimal and of a restricted number of types. Only a network structure permits the statement of the minimal differences. We predict that the same types of links will occur in other lexical networks.

One of the most striking things about this lexical network representation is that all of the minimal differences are semantic in nature, despite the fact that the various senses have a great many syntactic differences. All of the syntactic differences are predictable from the minimal semantic differences.

Profile-shift occurs twice in the network, which suggests to us that as more such cases are investigated more and more instances of profile-shift should show up. We feel it is an extremely basic kind of semantic relation, as Langacker and Talmy have repeatedly suggested. But what is most remarkable about profile shift is that it can give rise to important and noticeable truth-conditional differences, as in the relationship between take-4 (Sam took a punch at Harry) and take-5 (Harry took a punch from Sam); in the latter case, Sam connected, though in the former case he did not necessarily connect.

Finally, and most importantly, we have shown that the lexicon is governed by explanatory principles. It is anything but a mere list of irregularities, and characterizing the relations among entries is fundamental to the study of semantic theory.

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EXPERIMENTAL PHONOLOGY

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This paper is an advertisement for Experimental Phonology. I will try to promote an approach to phonology that I think will do for the field what Buddhism promises to do for the soul: to permit it to escape the endless and agonizing cycle of birth and death of trendy theories, schools, frameworks, etc. and achieve oneness with the spirit and principles that guide all scientific endeavor, be it physics, chemistry, physiology, psychology, or linguistics. The structure of my paper will be as follows:

--To characterize briefly what experimental phonology is.
--To counter certain myths or misconceptions about experimental phonology.
--To provide examples of phonological experiments.

1. WHAT IS EXPERIMENTAL PHONOLOGY?

Undoubtedly the popular image of an experimental discipline includes complicated procedures or instruments. But this is a false image: first, the complexity is unessential and complex instrumentation by itself does not make an undertaking experimental. William Harvey conducted some of the first physiological experiments with little more equipment than a few tourniquets. What is essential for experimentation is an attitude: first, a keen awareness that the world is not necessarily as it may seem, i.e., that our sense-impressions and therefore the opinions and beliefs based on them may be faulty, and, second, the willingness to actively do something to compensate for or correct these potential errors by making observations under carefully controlled conditions. Pasteur (and others before him) doubted the apparent evidence of spontaneous generation of, for example, bacterial growth in food because he guessed that we might be unable to detect the minute air-borne spores that produced the bacteria. He therefore contrived a situation where foodstuff was left open to the air but where air-borne micro-organisms were prevented from reaching it. He demonstrated that under such circumstances the food remained unspoiled, thus further undermining the doctrine of spontaneous generation. What made his actions experimental was taking pains to make observations whose evidential value on the issue at hand would not be distorted by unwanted sources of error. As a field matures and accumulates more experience with experimentation it (a) learns of more potential sources of error and ways to compensate for them and (b) begins to ask questions of a more detailed sort which requires ever more careful observations. This is where the complicated instruments and procedures may enter in--simply as a natural outgrowth of the epistemological development of the discipline.

Perhaps it is no secret that phonology as an experimental discipline is in its infancy and the techniques used are still relatively simple. So all who would be the Galileos, Newtons, Harveys, Lavoisiers, and Pasteurs of phonology can still get in at the beginning where imagination and a breadth of knowledge counts for more than narrowly focussed technical knowledge.

There might have been some expectation that a characterization of experimental phonology would have made some mention of the specific techniques employed in phonological experiments. I have purposely omitted such a list because specific techniques are--in the grand scheme of things--of purely secondary importance. No such list could hope to be complete: the techniques used are limited only by imagination, of which, hopefully, there is an endless supply in linguistics. As one learns from the history of science, there is a constant evolution of experimental techniques in every scientific discipline. Nevertheless, I will present a bit later some examples of experimental techniques from my own work.

2. Some Misconceptions About Experimental Phonology

"Experimental phonology is just a new label for experimental phonetics."

There exists a well-established tradition called 'experimental phonetics', the founders of which include L'abbé Rousselot (1897-1901) in France and E. W. Scripture (1902) at Yale. Although many of the works of Rousselot and those influenced by him (Roudet 1910, Grammont 1933) were motivated by traditional phonological concerns, notably the causes of sound change, the parallel tradition initiated by Scripture, which eventually was the one adopted by the majority of experimental phoneticians, espoused a strongly positivist philosophy where only the supposedly objective measurements of speech obtained from instrumental records were accorded much value. To a large extent it was this positivist attitude which dominated the phonetic work in what was called 'speech science', i.e., the study of speech in departments of speech pathology.

Experimental phonology is quite distinct from this latter version of experimental phonetics in two respects. First, it is different in philosophy since it is not bound by a positivist attitude. Philosophically, it is very similar to mainstream science which perhaps is best labeled as 'hypothetico-deductive', i.e., driven equally by hypotheses, a product of reason, as well as by data, a product of the senses. Simply put, it attempts to reconcile what we think with what we see. Ladefoged's term 'linguistic phonetics' was probably coined in order to differentiate his practice, motivated by linguistic theory, from traditional, positivist experimental phonetics. Second, experimental phonology encompasses much more than phonetics; it incorporates certain areas of psychology as well as the sociolinguistic experiments of

the type performed by Labov (see, e.g., Labov 1966). For that matter, if experimental studies of animal vocalizations or even facial expressions could shed light on the behavior of speech sounds--which I believe is true (Ohala 1984)--then they, too, would be part of experimental phonology. Whatever is expected to yield reliable answers to traditional questions in phonology belongs in experiment phonology.

"Experimental phonology, per se, does not include theory construction."

It may also be thought that experimental phonology consists exclusively of testing of theories without theory construction and is less exciting because, as everyone knows, theory spinning is "where all the action is". But this is not the case. A more mature view of science, including phonology, sees it as a continuous cycle of theory--test--revised theory--revised test, etc. One doesn't just throw one's speculations to a doting public, take a bow, and then retire. A theory should contain within its statement the seeds of a test; the results of a test more often than not require the modification or even the complete abandonment of the theory and the formation of a new one. Rarely, if ever, are these activities farmed out to separate individuals. Claude Bernard, for example, regarded as the founder of experimental physiology (now simply 'physiology'), was the source of a good many theories over a century ago, e.g., concerning digestion, the function of the liver, etc.,--theories which survive to the present because they have survived attempts at falsification through tests--in many cases, his tests.

The inseparability of theory and experiment is based on the simple fact that if one can form a belief about something, that is, formulate a hypothesis or a theory, then one can also critically examine the origin of that belief and actively try to refine and control the observations that prompted it.

3. Some Examples of Phonological Experiments.

A. Levels of Phonological Representation.

It is widely assumed in modern phonology that there exist at least two distinct levels of representation of words: the 'surface' level which represents the actual pronunciation or something very close to it, and an 'underlying' level which may be closer to the lexical level, the form of pronunciation in the mental lexicon. For example there has been some discussion in the literature regarding the epenthetic stops which may appear in words such as warm[p]th, team[p]ster, young[k]ster, prin[t]ce. Some would argue that these stops are surface phenomena, not present at more underlying levels. It is possible to explain how these stops could be created as consequences of the assimilatory denasalization (and devoicing) of the latter half of the nasals. Neverthe-

less, this by itself is no proof that these stops are not present at more underlying levels; through sound change such stops have become integral parts of other words--if we can take consistency of spelling as a rough guide to the lexical status of the stops, e.g., glimpse, Thompson, dempster, bumpkin, Hampshire, resumption, thunder, and such spellings of something as 'sump'n'. Nevertheless, it is risky to put too much confidence in spelling since it may reflect simply the conventional, usually conservative, spelling before the sound change occurred. In the case of the stem glimpse, the OED records the following divergent spellings, where the starred years given entries with the 'p':

1386	glimsing
1400	glymsede
1540	glimsing
1551	glimsinge
1557	glimsing
1583	glimsinge
*1592	glimpse
*1598	glimpse
*1601	glimpsing
1602	glimsing
*1603	glimpsing
*1633	glimpst
*1635	glimpsed
*1657	glimpsing
1663	glimsing
*1671	glimpse

(All subsequent entries contain 'p'.)

Given this much variation, who would be willing to say that the 'p' was underlying only around its first attestation of 1592 or that all 'p' forms subsequent to that gave sure testimony to its underlying character? In a search for more reliable evidence on the status of such stops I proposed that if certain durational characteristics of sounds are determined by their underlying syllable structure, it may be possible to differentiate surface from underlying stops by looking at their influence on the duration of surrounding segments (Ohala 1981a, 1981b, 1986a). It is well established that sonorants appearing before tautosyllabic voiceless obstruents are considerably shortened in English vis-a-vis those not closed by voiceless obstruents (Lovins 1978). Therefore, if a [p] in a word such as teamster is a purely surface entity, the vowel and nasal should be relatively long; if it present at the underlying level, however, they should be relatively short. Simplifying somewhat, I tried this idea out first on non-existing but possible English words clam + ster and clamp + ster. (Instructions: "add 'ster' to 'clam', etc."; elicitations of these two forms done several minutes apart and mixed in with other distractor items.) Fig. 1 shows the measured VN durations from recordings of subjects producing these neologisms.

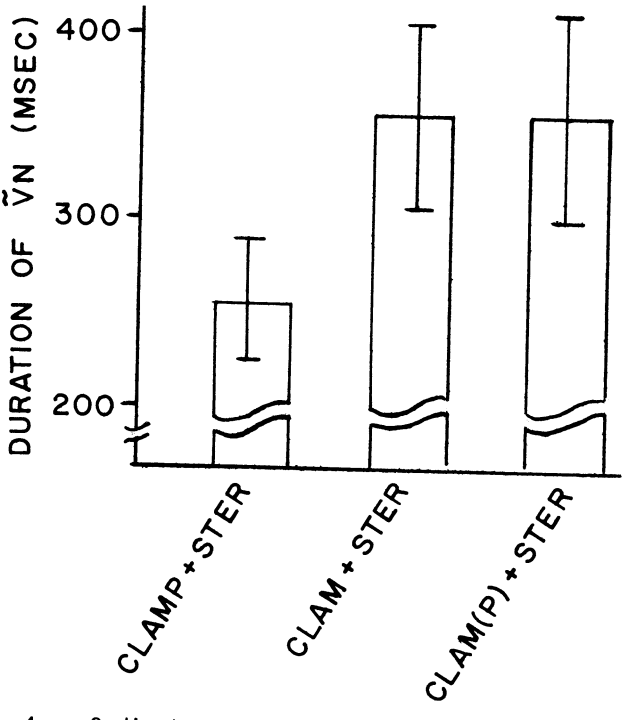


Fig. 1. Ordinate: Duration (in msec) of VN sequence in, from left to right, clamp + ster, clam + ster (with no detectable epenthetic stop), and clam[p] + ster (with epenthetic stop). Standard deviation indicated by vertical lines.

The results were consistent with the idea that the durational characteristics of the VN before the [p]'s in clamster were different--longer--than those in clampster, presumably because the former were more "surfacy" than the latter.

There are other ways to demonstrate the surface or non-surface character of sounds and they need to be used more widely in phonology than they are at present. Differentiating such levels on purely impressionistic grounds or, worse, on the basis of the thoroughly discredited and meaningless criterion of 'simplicity', is foolhardy.

B. Recognition of the Connection between Words.

Since the time of Panini and Plato it has been the task of phonologists to demonstrate the relationship between words based in part on their sound. Recently, the phonological similarity of words has been cited as evidence of their psychological one-ness.

Thus, given the existence of pairs of words such as those in (1)

(1)

obscene	obscenity
grain	granular
code	codify
South	Southern

known to be related historically, semantically, and orthographically, it is assumed that for each pair the speaker knows of a common underlying form from which the different pronunciations are derived by the application of certain phonological rules. But what evidence do we have that the native speaker of English knows this never-pronounced form? Well, first there is our knowledge derived from linguistic study of the history of English words. But we know this is an unsure guide: beef and cow are historically related, as are nerve and snare, but average speakers are so unaware of the connection that they typically display mild surprise at being informed of this. Well, in addition, there should be a fair amount of phonetic similarity between the words in order to have common underlying forms. But this is an unsure guide, too, because such pairs as admire / admiral, mar / marriage are phonetically similar but few, I think, would posit them as having common underlying forms. How about also insisting that there be a semantic relationship, too? This also is an unsure guide, as beef and cow would indicate, as well as such pairs as leap / leopard or penis / penetrate. The answer, as is well known, is that word pairs that have a common underlying form should have both semantic and phonetic similarity and, moreover, should exhibit a common, widely-attested, phonetic relationship. Thus, extreme / extremity meet this requirement since there are many other pairs showing the same kind of alternation, but pope / papal would not since there are few other pairs showing the same relationship (in fact, to my knowledge, only one: nose / nasal). Creating a common underlying form for extreme / extremity would take advantage of a generalization--the phonological rules which relate tense and lax vowels--creating a common underlying form for pope / papal could not take advantage of any such generalization. This argument, then, is based on the assumption that the native speaker is good at recognizing and squeezing out all the general sound patterns permitted by the surface forms of words. But is the native speaker as good as making such generalizations as we linguists are (Derwing 1977)?; our judgements on the matter are unreliable because our background biases us to see general patterns where the non-linguist may not. There are countless 'generalizations' in the visible universe waiting to be made but history reveals that nevertheless they only became "obvious" after someone points them out, e.g., that outgrowths of facial hair in primates, including humans, is always located at the periphery of the head, i.e., where it would be most obvious to a viewer facing the individual and thus help to make the head (and presumably the head's owner)

look larger (Guthrie 1970).

Manjari Ohala and I designed an experiment to test whether native speakers can differentiate general from particular sound patterns that connect pairs of words (Ohala & Ohala, in press). The experiment, an elaboration of one conducted by Derwing and Baker (1977), was carried out as a class project by students in one of my graduate courses. Briefly, we drew up a list of 20 words thought to exhibit various common phonological relationships and 20 words exhibiting various isolated phonological relationships; see (2).

(2)

Common Patterns	Isolated Patterns
particle / particular	thumb / thimble
substance / substantial	strong / stringent
extreme / extremity	pope / papal
resume / resumption	applaud / plausible
abstain / abstention	peace / pacify
regal / regicide	nose / nuzzle
comprehend / comprehensive	slay / slaughter
erode / erosion	price / precious
permit / permission	mouse / muscle
proper / propriety	toad / tadpole
secret / secretary	confer / confession
Peter / petrify	live / liver
magnet / magnesia	linger / lingerie
vine / vinegar	page / pageant
fable / fabulous	promise / promiscuity
glass / glacier	tame / timid
vocal / vociferous	leap / leopard
marine / marinate	male / malicious
slipper / slippery	risk / rescue
sect / section	haste / hassle

Some of the word pairs in the latter set are not, in historical fact, related to each other ('confer / confession' to 'haste / hassle'). However, native speakers may not know this, and were, in any case, free to express their own opinion on the matter. (Here I simplify the description of the procedures; for details see Ohala & Ohala, in press.) We presented these pairs orally, randomized, to 16 English speakers, and asked them rate them on a 5 point scale, first as to their derivational relationship ("could they have a common ancestor?"), then on a second run, on their semantic similarity, and finally on a third run on their phonetic similarity. Before each run we offered and discussed a smaller practice set of different word pairs whose ratings would not be controversial, e.g. 'parasol / umbrella', 'lamb / lamp'. Subjects were told that their judgements would help us select items that would be used in an aptitude test for high school students and that their answers should simply reflect their intuitions as educated adults.

We hypothesized that, for word pairs of comparable phonetic and semantic similarity, the generality of the sound pattern relating them would make subjects see a closer derivational connection. That is, that after taking into account the various semantic and phonetic judgements, subjects would give significantly higher derivational closeness ratings to pairs of the sort 'extreme' / 'extremity', than they would for those like 'pope' / 'papal'. It turned out that the degree of judged phonetic similarity counted for very much less than the semantic similarity in determining or correlating with the derivational judgement, so that final analysis was done just with semantic vs. derivational judgements. This result may be seen in Fig. 2.

The solid regression line, a logarithmic function derived by the least squares method, gives the best prediction of the derivational ratings of all 40 test words based on their semantic rating. The dashed line gives the function for the 20 words

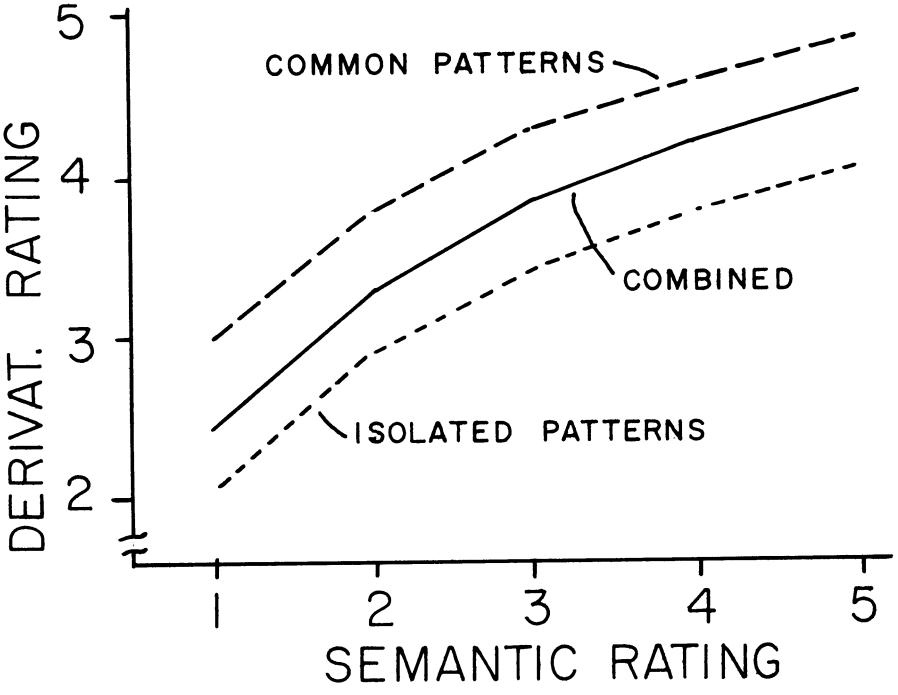


Fig. 2. Regression lines found by least squares method showing subjects' judgements of derivational relationship as a function of their judgements of semantic similarity of the word pairs in the experiment. Solid line: all 40 word pairs; dashed line: 20 words exhibiting common sound patterns; dotted line: 20 words exhibiting isolated sound patterns.

exhibiting the common patterns and the dotted line, the function for the 20 words showing the isolated patterns. The latter two functions are not significantly different, however, from the first one, i.e., they do not account for significantly more variance.

We took these results to show that, contrary to what is commonly assumed, native speakers do not necessarily differentiate general from particular sound patterns, at least in derivational phonology. This should not be a very surprising result: what payoff to the native speaker is there for the psychic energy expended in noticing the general sound patterns and working out the common underlying forms for pairs related by them? Remarkably little, it would seem. Memory space is certainly not at a premium and in any case everyone recognizes that each member of pairs such as 'extreme' / 'extremity' has to be stored separately since they have at the very least idiosyncratic semantic and occasionally syntactic features--the same is true for most such pairs: 'divinity' is commonly used both as a noun and an adjective although this is not true of 'serenity', in spite of their both showing the same phonological pattern. The generalizations may have some value in spelling and reading but it is hard to evaluate this because most pairs related, for example, by vowel shift, have other orthographic cues to the tense and lax distinction, i.e., the silent 'e' at the end of 'extreme' 'divine' and the like. More attention should be given to a cost/benefit analysis of forming phonological generalizations. There may be some surprises.

C. Dissimilation.

The preceding experiments tested long-standing theories or assumptions. I turn now to a novel theory, of my own, which provides an explanation for dissimilation. Again, I give only a brief account; for futher details see Ohala 1981c, 1983, 1985, 1986b.

Dissimilations such as Grassmann's Law (3) or the dissimilation of glottalization in Quechua (4), and Salish (5) are puzzling

(3) Dissimilation of Aspiration in Sanskrit and Greek (Grassmann's Law; data from Brugmann 1886:355ff).

Proto-Indo-European		Sanskrit	Greek
*bʰau̯dʰ-a-ti	"awake"	bódʰati	peúthomai
*dʰa-dʰā-ti	"put"	dádʰāti	

(4) Dissimilation of Glottalization in Quechua (Orr & Longacre 1968).

Proto-Quechumaran	Aymara	Proto-Quechuan
*p'amp'a	p'amp'a	p'ampa "cover w/ dirt"
*t'ant'a	t'ant'a	t'anta "bread"

(5) Dissimilation of Glottalization in Salish (Thompson & Thompson 1985).

Proto-Interior Salish	Shuswap	
*k'íp'	kíp'-m	"pinch"
*q'wác'	qwéc'	"full"
*p'úχ'	s-púť'-nt	"fog"

for at least two reasons: first, it involves what seems to be 'action at a distance', i.e., influence of one segment upon another skipping over intervening unaffected segments. Second, there must be some natural reluctance to admit dissimilation into the canon of recognized natural sound changes if we also include assimilation. How can we suggest with a straight face that it is natural both for sounds unlike to become more similar and also for similar sounds to become less similar?

My solution to this is relatively simple: first, these are not instances of action at a distance. Rather, it must have been the case that the aspiration which dissimilated in the Grassmann's Law cases and the glottalization which dissimilated in Salish, originally spilled over onto adjoining segment. Normally, listeners "correct for" such predictable assimilations, factoring out the predictable breathiness or tense voice when they occur non-distinctively on adjacent vowels and sonorants. Dissimilation occurs when they apply these 'corrective' rules inappropriately. That is, they engage in a kind of phonetic hypercorrection. Another way of looking at it is to say that the distinctive use of a given feature at one site in a word camouflages its distinctive function at another site in the same word. When these hypercorrecting listeners speak such words themselves, they omit the feature at the place where they thought (erroneously) that it was purely non-distinctive or predictable.

There is evidence for the posited 'spillover' of the features like glottal constriction in glottalized segments; see Keller (1959). Furthermore, this theory predicts that there should be rather strict constraints on the kind of features subject to dissimilation at a distance: namely, those known to spread several tens of milliseconds beyond the segment they are properly

attached to. Surveying the literature on dissimilation, this is borne out: the features that dissimilate are labialization, retroflexion, aspiration, glottalization, pharyngealization, uvularization, nasalization, place of articulation, etc. Features that do not spread, such as stop, fricative, or affricate, should not dissimilate--and it seems that in general they don't or in the cases where they are said to, the evidence is equivocal, sometimes by the testimony of the author making the claim; see Posner (1961:93, 99).

Dissimilation seen as hypercorrection is motivated by the kinds of distortions of speech sounds caused by assimilation. Sound changes due to assimilation, then, may be viewed as hypo (under)-correction. This allows us to see that although dissimilation is the opposite of assimilation in many respects--this was the source of phonologists' discomfort--they are not mirror images in all of their characteristics. It has been noted that the product of assimilation is often a new segment or series of segments in a language's sound inventory, for example, when Ancient Tibetan dropped syllable final consonants on it way to becoming Modern Lhasa Tibetan, back rounded vowels became front rounded vowels when the dropped consonant was a dental (6). This is

(6) Tibetan fronting of back vowels before final dentals, but not before non-dentals (Michailovsky 1975; transcription simplified).

Written Tibetan	Lhasa Tibetan	
drug	ṭhuu	"six"
thog	thɔɔ	"roof"
nub	nuu	"west"
BUT:		
bod	phøø	"Tibet"
ston	tʊ̈	"autumn"
lus	lyy	"body"
spos	pøø	"incense"

transparently due to the well-documented fronting influence that dental consonants have on back rounded vowels (Lindblom 1963, Stevens & House 1963). That is, we must assume that even before the final dental was dropped these vowels were phonetically but non-distinctively much like front rounded vowels. This front-rounded character became distinctive or phonologized when listeners no longer detected the final consonant and had no basis for predicting and therefore correcting the frontness. Thus hypo-

correction led to a new class of vowels. However, it has been observed that dissimilation never (or seldom) leads to a new segment. This follows directly from my account since if dissimilation is hyper-correction its action would be to normalize or undistort something thought to be abnormal or distorted. Therefore the changed segment will always be one which is already a familiar element in the segment inventory.

Futhermore, although in assimilation the conditioning environment may drop out at the same time as the conditioned change--as in the case of the Tibetan vowels and countless other cases one could cite (the development of distinctively nasal vowels from loss of a post-vocalic nasal consonant, the development of distinctive tone on vowels with simultaneous neutralization of voicing on preceding consonants)--in dissimilation, on the other hand, the conditioning environment may not be lost at the same time as the conditioned change occurs. This is because the conditioning environment must be there for the listener to attribute the imagined distortion to, i.e., to be the source of the camouflage. As I read the historical record, this is precisely what happens: the conditioning environment is not lost at the same time as the dissimilation itself takes place.

Finally--and this is why I chose to discuss this example--there is experimental evidence which supports this theory. The evidence for dissimilation at a distance is not very impressive yet, but dissimilation of contiguous segments can be easily demonstrated. As part of an experiment addressing a somewhat different issue, Ohala and Feder (1986) obtained listeners' judgements of the identity of synthetic vowels from the continuum between and including /i/ and /u/, when presented in isolation and the contexts of a following /b/ and a following /d/. The results, expressed as percentage of identification of /u/ is shown in Fig. 3. The solid line shows how the vowels were identified in isolation, the dashed line, in the /d/ environment, and the dotted line, the /b/ environment. It is clear that more /u/ judgements were obtained in the /d/ context. What this means is that some vowels which in other contexts were identified as /i/ were instead regarded as /u/--that is, they were 'backed'--in the consonantal context known to give rise to fronting of /u/ (see (6) above and the discussion accompanying it). I interpret this as a case of a fronting environment camouflaging--dissimilating--some of the frontness of a vowel so that it is taken to be a back vowel.

4. Conclusion.

The ultimate argument for experimental phonology is the accumulation of successful and insightful applications of experimental methods to traditional questions in phonology. In my judgement that argument has been made. The literature of such applications goes back at least to 1901 and includes work by such distinguished linguists or psycholinguists as Edward Sapir (1929, 1933), W. Freeman Twaddell (1935:11), Stanley Newman (1933), Joseph Green-

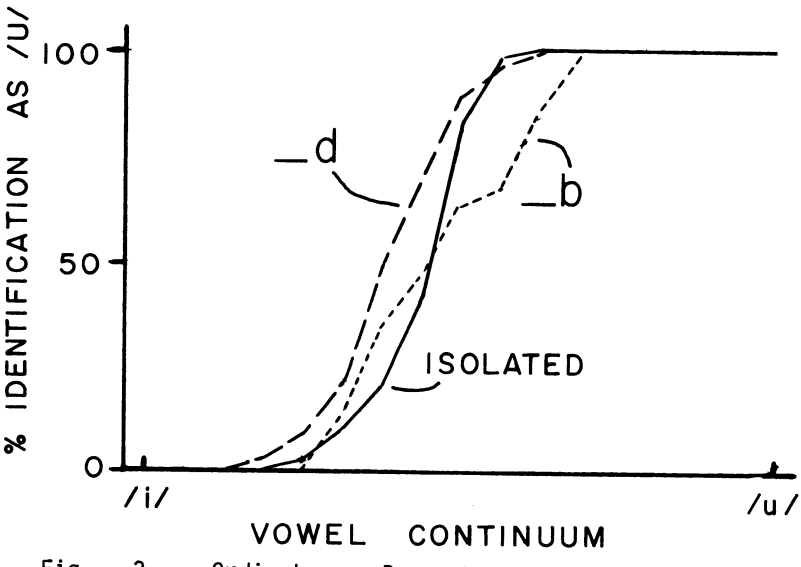


Fig. 3. Ordinate: Percentage identification of synthetic vowel stimuli as /u/; abscissa: vowel continuum /i/ to /u/. Solid line: vowels in isolation; dashed line, in the environment /_d/; dotted line, in the environment /_b/ (from Ohala & Feder 1986).

berg (Greenberg & Jenkins 1964, 1966), Roger Brown (Brown & Hildum 1956, Brown & Nuttall 1959), Sandford Schane (Schane & Tranel 1970, Schane, Tranel, & Lane 1974), and James McCawley (1986) to name a few.

Furthermore, I take comfort in the fact that all phonologists who operate in an academic environment--and that includes the vast majority--give open testimony to their belief in the experimental method, if not in their practice of phonology then in the way they evaluate students. Academics are called upon periodically to assess the knowledge or skills of their students. It might be possible to take a non-experimental approach and assume that simply because students have been exposed to a given body of material that they therefore have absorbed or "internalized" it. But the academic community is not satisfied with that and demands evidence. What evidence? The evidence of tests or their equivalent, e.g., the production of original papers where the insights presented by the student could not have been the result of rote memorization. I don't think it is unreasonable to expect that this practice of relying on tests should be used not only in teaching but in the subject matter which is taught.

Antonie Cohen (personal communication) of Utrecht University tells an anecdote relevant to this. He says that in a certain university (which shall remain nameless) certain faculties do in fact, practice academic evaluation in way that most phonologists

practice phonology--or at least a variant on it. In these cases a final examination consists of all students enrolled in a given course filing into a room and the teacher asking questions out loud; if any individual student can answer the question it is assumed that they all know the answer. He did add, however, that this practice is only followed in schools that teach the so-called liberal arts, e.g., languages, history, philosophy, and not in those that teach brain surgery, bridge building, or car repair.

I leave it to the reader to decide whether phonological theories should be evaluated the way philosophers or brain surgeons are in this school. It is not a facetious question. In fact, the non-academic world is making increasing demands on phonologists to explain the workings of speech: in speech technology (synthesis of speech from text and automatic speech recognition), in language teaching, in speech pathology, in advertising, etc.(van den Broecke, Lindblom, & Ohala 1985). If we don't satisfy these demands there could be adverse consequences: phonologists will get the reputation of being an elite ivory-tower enterprise, good for little else than to keep practicing phonologists off the streets--as long as indulgent tax-payers or tuition payers are willing to foot the bill. Furthermore--and this is, in my view, the worst outcome--inferior answers to phonological questions will supplant better answers in the areas that need them. Not only phonologists will lose in that case, but all of society. Experimental methods can solve this problem. It has worked for other disciplines, from physics to physiology to pedagogy. It can work for phonology, too.

5. Acknowledgements.

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Paradigms Large and Small

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Most widely accepted approaches to morphology acknowledge that affixation is of two types: inflection and derivation. In the clearest cases, inflection is syntactically governed (e.g. agreement), productive, regular, and does not affect the category of the inflected word. In contrast the clear instances of derivation either add a semantic element (e.g. diminutive) or change the category of a form or both. Derivation is frequently irregular—semantically, phonologically, and/or morphologically. As we all know this simple picture does not tell the whole story. There are intermediate cases of all types. Plural, for example, is usually considered an inflection. However plural is an added semantic element, and it is not hard to find languages with significant irregularity in their plural marking systems. Similarly tense and aspect are generally considered inflections, again tense and aspect are added semantic elements, and many languages display significant irregularities in tense/aspect marking. In spite of these sorts of cases most of us feel that the distinction between inflection and derivation is, or would be, useful, if only we could put our finger on it.

In this paper I want to step back and take a look at morphology construed paradigmatically, and make a number of observations that will, I hope, enable us ultimately to develop a more rigorous view of the distinction between inflection and derivation. In specific I will show that there is an interesting correlation of properties among paradigms defined in certain ways. Then I will argue that some of the traditionally accepted grounds for contrasting inflection and derivation follows from some facts that themselves follow from these correlations.

The first task at hand is to characterize the class of morphological entities that count as paradigms for the purposes of this study. I will do this by a series of successive approximations. The first of which will require the definition of the notion *morphologically related*: a set of forms is morphologically related if they all share the same morpheme. This allows us to define the first constraint on the set of entities we want to treat as paradigms: a paradigm is a set of morphologically related words.[2] It turns out that to achieve the results we want the notion of paradigm has to be more restrictive: a paradigm is a set of morphologically related words which all participate in the same morphological construction.[3] Thus although the English words *superfluous* and *insuperable* are morphologically related, they are not in the same paradigm because they do not participate in the same morphological construction. On the other hand *work*, *works*, *working*, and *worked* do belong to the same paradigm because they do participate in the same morphological construction.

As a first approximation let me distinguish two types of morphemes, those that belong to large, and possibly but not necessarily, open sets

and those that belong to small, closed sets. The intuition I am after is that of stem versus affix, which terms I will use for the large and small sets respectively. Put another way, affixes are the morphological equivalent of function words. Of course, if one pushes this preliminary characterization too hard, the distinction will fuzz out, but at the degree of approximation we are currently dealing with, it will do: a paradigm is a set of words morphologically related via their stems, which all participate in the same morphological construction.[4] Finally, some of the properties we will look at require a completeness clause be added the definition: *a paradigm is a complete set of the words morphologically related via their stems, which all participate in the same morphological construction.*

There are a few more wrinkles which I will sketch informally. The first is that a suppletion clause needs to be added, allowing for the case in which a semantically consistent but morphologically unrelated form substitutes for a point in a paradigm. Thus *go, goes, going, went, gone* constitutes a paradigm under the suppletion clause. Another wrinkle is that certain affixes (in English predominantly prefixes) may act as part of stems in such a way that they do not count in the completeness clause. Thus the completeness clause does not obligate us to treat the sets of forms *commit, commits, committing, committed* and *emit, emits, emitting, emitted* as parts of the same paradigm even though both contain a stem *-mit.*

Given the above characterization of a paradigm, we can define a paradigm set as a complete set of paradigms which differ only in their stems.[5] Paradigm sets fall into two types across languages. The contrast between these two types is summarized in Table I.

Type I Paradigm sets	**Type II Paradigm sets**
—show few classes	—show many classes
—have regular morphophonemics[6]	—may have problematic or irregular morphophonemics
—are filled out	—may have "holes"
—have meanings which are the sum of the meanings of their parts	—may have idioms
—morphemic complexes show no idiosyncratic class properties	—morphemic complexes may have idiosyncratic class properties

Table I

Many languages have paradigm sets showing just such contrasting properties. Those that I have examined in detail include Latin, Zoque, and Ojibwa. This difference in paradigm set type correlates in an interesting way with another property of paradigms have, namely that of size. If a paradigm is large, i.e. if there are lots of affixes and affixes combinations on a single stem, it always belongs to a type I paradigm set. On the other hand paradigms belonging to type II paradigm sets are always small, i.e. a single stem can take only a few affixes or affix combinations. Notice that this claim about paradigm sets is

independent of whether the paradigms are inflectional or derivational.[7] Due to limitations on length there is in this paper only space enough to show that both type I and type II paradigm sets appear in inflection. There are languages in which one can show that this distinction in paradigm set type also crosscuts derivation. I will illustrate the type distinction in inflectional paradigms by contrasting the Latin verbal inflection with Latin nominal inflection.

In Latin verb paradigms are large, on the order of 200 points in the paradigm, but Latin nominal paradigms are small containing 12 forms.[8] Latin verbs form a type I paradigm set. Latin nouns form a type II. First we will show that verb conjugation forms a type I paradigm set.

Latin verbs fall into only five classes. Next to thousands of verb stems that fall into these five, there are only four irregular verbs and three of them are only marginally irregular. In fact, with some fairly straightforward and regular morphophonemics the five verb classes and the three marginally irregular verbs can be reduced to a single class, although I will not be able to show that here. The Latin verb is laid out, by tenses, subjunctivity, and voice, in (1) through (6).

(1) Imperfective indicative tenses

			first person	*second person*	*third person*
I	'love' amáre	*present* *sg.*	amó	amás	amat
		pl.	amámus	amátis	amant
		imperfect *sg.*	amábam	amábás	amábat
		pl.	amábámus	amábátis	amábant
		future *sg.*	amábó	amábis	amábit
		pl.	amábimus	amábitis	amábunt
II	'warn' monére	*present*	moneó	monés	monet
			monémus	monétis	monent
		imperf.	monébam, etc., *future* monébó, etc.		
III	'rule' regere	*present*	regó	regis	regit
			regimus	regitis	regunt
		imperf.	regébam, etc.		
		future	regam	regés	reget
			regémus	regétis	regent
III-i	'take' capere	*present*	capió	capis	capit
			capimus	capitis	capiunt
		imperf.	capiébam, etc., *future* capiam, etc.		
IV	'hear' audíre	*present*	audió	audís	audit
			audímus	audítis	audiunt
		imperf.	audiébam, etc., *future* audiam, etc.		
irreg	'bear' ferre	*present*	feró	fers	fert
			ferimus	fertis	ferunt
(4 stems)		*imperf.*	ferébam, etc., *future* feram, etc.		

(2) Imperfective subjunctive tenses

I	*present*	*sg.*	amem	amés	amet
		pl.	amémus	amétis	ament
	imperfect	*sg.*	amárem	amárés	amáret
		pl.	amárémus	amárétis	amárent
II	*present*	*sg.*	moneam	moneás	moneat
		pl.	moneámus	moneátis	moneant
	imperfect		monérem, etc.		
III	*present*		regam, etc. *imperfect* regerem, etc.		
III-i	*present*		capiam, etc. *imperfect* caperem, etc.		
IV	*present*		audiam, etc. *imperfect* audírem, etc.		
irreg	*present*		feram, etc. *imperfect* ferrem, etc.		

(3) Perfective indicative tenses (identical in all classes)

present	*sg.*	amáví	amávistí	amávit
	pl.	amávimus	amávistis	amávérunt/-ére
past	*sg.*	amáveram	amáverás	amáverat
	pl.	amáverámus	amáverátis	amáverant
future	*sg.*	amáveró	amáveris	amáverit
	pl.	amáverimus	amáveritis	amáverint

(4) Perfective subjunctive tenses (identical in all classes)

perfect	*sg.*	amáverim	amáverís	amáverit
	pl.	amáverímus	amáverítis	amáverint
pluperfect	*sg.*	amávissem	amávissés	amávisset
	pl.	amáverissémus	amávissétis	amávissent

(5) Passive of imperfective indicative tenses

			first person	*second person*	*third person*
I	'be loved' amárí				
	present	*sg.*	amor	amáris	amátur
		pl.	amámur	amáminí	amantur
	imperfect	*sg.*	amábar	amábáris/-báre	amábátur
		pl.	amábámur	amábáminí	amábantur
	future	*sg.*	amábor	amábiris/-bire	amábitur
		pl.	amábimur	amábiminí	amábuntur
II	'be warned' *pres.* monérí		moneor	monéris	monétur
			monémur	monéminí	monentur
		imperf.	monébar, etc., *fut.* monébor, etc.		
III	'be ruled' *pres.* regí		regor	regeris	regitur
			regimur	regiminí	reguntur
		imperf.	regébar, etc.		
			regar	regéris/-ére	regétur
			regémur	regéminí	regentur

(5) Passive of imperfective indicative tenses (*cont.*)

III-i	'be taken' *pres.*		capior	caperis	capitur
	capí		capimur	capiminí	capiuntur
		imperf.	capiébar, etc., *fut.* capiar, etc.		
IV	'be heard' *pres.*		audior	audíris	audítur
	audírí		audímur	audíminí	audiuntur
		imperf.	audiébar, etc., *fut.* audiar, etc.		
irreg	'be born' *pres.*		feror	ferris	fertur
	ferrí		ferimur	feriminí	feruntur
	(4 stems)	*imperf.*	ferébar, etc., *fut.* ferar, etc.		

(6) Passive of imperfective subjunctive tenses

I	*present*	*sg.*	amer	améris/-ére	amétur
		pl.	amémur	améminí	amentur
	imperfect	*sg.*	amárer	amáréris/-rére	amárétur
		pl.	amárémur	amáréminí	amárentur
II	*present*	*sg.*	monear	moneáris/-áre	moneátur
		pl.	moneámur	moneáminí	moneantur
	imperfect		monérer, etc.		
III	*present*		regar, etc. *imperfect* regerer, etc.		
III-i	*present*		capiar, etc. *imperfect* caperer, etc.		
IV	*present*		audiar, etc. *imperfect* audírer, etc.		
irreg	*present*		ferar, etc. *imperfect* ferrer, etc.		

Not included in these paradigms are infinitives (other than for citation purposes), imperatives, participles, and periphrastic tenses (i.e. perfective passives) which do not fit the same construction types as the finite forms. Loosening our definition of paradigm slightly to include any of these forms would not affect the result at all. Latin verb conjugation is thoroughly regular.

Now contrast this regularity with the quirkiness of Latin noun declension. Grammar books lay out a neat system of five declensions, quietly acknowledging that there are a few minor variants. (In particular Classes II, III, and III-i have neuter variants.) The basic facts are outlined in (7).

In spite of what the grammar books say, a rigorous analysis shows that upwards of twenty classes are necessary. In fact, all the textbook declensions turn out to be groups of several closely related classes rather than single homogenous classes. While the grammars acknowledge two kinds of third declension nouns, neuters aside, as in (7a), consider just the forms in (8) which show that there are more than 11 classes of such nouns.

(7) (a)

		nom.	*gen.*	*dat.*	*acc.*	*abl.*
I	'girl'	puella puellí	puellae puellárum	puellae puellís	puellam puellás	puellá puellís
II	'servant'	servus serví	serví servórum	servó servís	servum servós	servó servís
III	'leader'	dux ducés	ducis ducum	ducí ducibus	ducem ducés	duce ducibus
III–i	'cough'	tussis tussés	tussis tussium	tussí tussibus	tussim tussís	tussí tussibus
IV	'fruit'	frúctus frúctús	frúctús frúctuum	frúctuí frúctibus	frúctum frúctús	frúctú frúctibus
V	'thing'	rés rés	reí rérum	reí rébus	rem rés	ré rébus

(b)

		nom.	*gen.*	*dat.*	*acc.*	*abl.*
II	'war'	bellum bella	bellí bellórum	belló bellís	bellum bella	belló bellís
III	'name'	nomen nomina	nominis nominum	nominí nominibus	nomen nomina	nomine nominibus
III–i	'animal'	animal animalia	animalis animalium	animalí animalibus	animal animalia	animalí animalibus

(8)

	nom sg	*acc sg*	*abl sg*	*gen pl*	*nom pl*
(a)	dux	ducem	duce	ducum	ducés
(b)	canis	canem	cane	canum	canés
(c)	clávis	clávem/-im	cláve/-í	clávium	clávés
(d)	ovis	ovem	ove	ovium	ovés
(e)	avis	avem	ave/-í	avium	avés
(f)	mónsis	ménsem	ménse	ménsum/-ium	ménsés
(g)	hostis	hostem	hoste	hostium	hostés/-ís
(h)	sors	sortem	sorte/-í	sortium	sortés
(i)	pars	partem/-im	parte/-í	partium	partés
(j)	ígnis	ígnem	ígne/-í	ígnium	ígnés/-ís
(k)	tussis	tussim	tussí	tussium	tussés/-ís

et al. (*unmentioned forms declined identically*)

Granted the group of classes representing the third declension is the most diverse, nonetheless the data for it and for the other groups of classes is much more diverse and morphophonemically intractable, even within each group of classes, than is traditionally assumed.

A second way in which Latin nominal paradigms differ from Latin verbal paradigms is that there are many nouns which have forms from more than one class. Generally the forms of the singular are from one class and the forms of the plural are from another. In traditional Latin grammar these nouns are known either as *heteroclites* or as *heterogenous nouns* depending on whether the class difference involves a shift in gender. Some examples are given in (9).

(9)		*nom.*	*gen.*	*dat.*	*acc.*	*abl.*
(a)	Mixed classes of the same gender (heteroclites)					
	'vessel'	vás	vásis	vási	vás	vase
	(III/II *n*)	vása	vásorum	vásis	vása	vásis
	'acre'	júgerum	júgerí	júgeró	júgerum	júgeró
	(II/III *n*)	júgera	júgerum	júgeribus	júgera	júgeribus
(b)	Mixed gender classes (heterogenous nouns)					
	'bridle'	frénum	frení	frénó	frénum	frénó
	(II *n/m*)	frení	frénorum	frénis	frénos	frénis
	'jest'	jocus	jocí	jocó	jocum	jocó
	(II *m/n*)	joca	jocórum	jocís	joca	jocís
	et al.					

Another way in which Latin nominal paradigms differ from Latin verbal paradigms is that there are many nouns which lack one or more inflectional forms. In traditional Latin grammar these nouns are known as *defective*. This is exemplified in (10). In addition most fifth declension nouns have only nominative and accusative plural, and there are numerous nouns which are declined only in the plural.

(10)		*nom.*	*gen.*	*dat.*	*acc.*	*abl.*
'order'	*sg.*	—	—	—	—	jussú
'non-order'	*sg.*	—	—	—	—	injussú
'birth'	*sg.*	—	—	—	—	nátú
'chance'	*sg.*	fors	—	—	—	forte
'freewill'	*sg.*	—	spontis	—	—	sponte
'nothing'	*sg.*	nihil/níl	—	—	nihil/níl	—
'right'	*sg.*	fás	—	—	fás	—
'wrong'	*sg.*	néfás	—	—	néfás	—
'sex'	*sg.*	secus	—	—	secus	—
'morning'	*sg.*	máne	—	—	máne	—
'attack'	*sg.*	impetus	—	—	impetum	impetú/-e
	pl.	impetús	—	—	impetús	—
'request	*sg.*	—	—	precí	precem	prece
	pl.	precés	precium	precibus	precés	precibus
'force'	*sg.*	vís	—	—	vim	ví
	pl.	vírés	vírium	víribus	vírés	víribus
'turn'	*sg.*	—	vicis	vicí	vicem	vice
	pl.	vicés	—	vicibus	vicés	vicibus
'power'	*sg.*	—	opis	opí	opem	ope
	pl.	opés	opum	opibus	opés	opibus
'banquet'	*sg.*	—	dapis	dapí	dapem	dape
	pl.	dapés	dapum	dapibus	dapés	dapibus
'fruit'	*sg.*	—	frúgis	frúgí	frúgem	frúge
	pl.	frúgés	frúgum	frúgibus	frúgés	frúgibus
	et al.					

Yet another way in which Latin nouns are quirky in a way the verbs are not is that some case forms can be used idiomatically on certain nouns stems, as in (11). The form *máne* 'morning' (*nom/acc*) in (11a) may be used as an ablative. The ablative singular of some fourth and fifth declensions may be used as a dative (11b). This is the regular treatment of fourth declension neuters. The ablative singular of fourth declension neuters is regularly used as the genitive (11c)

(11) (a) *ad ipsum máne* 'on [that] very morning' *acc*
multó máne 'very early in the morning' *abl*

(b) *frúctú* for *frúctuí* 'fruit,'
cornú for **cornuí* 'horn,'
genú for **genuí* 'knee,'
verú for **veruí* 'spit,'
acié for *aciéí* 'point'

(c) *cornú* for **cornús* 'horn,'
genú for **genús* 'knee,'
verú for **verús* 'spit'

and a few others

In the grammars most such instances are treated as syncretism.

Finally nominal declension shows a lot of suppletion, mostly in the nominative, as exemplified in (12).

(12)	*nom.*	*gen.*	*dat.*	*acc.*	*abl.*
'no one'	némó	núllíus	néminí	néminem	núlló
'Juppiter'	Juppiter	Jovis	Jovi	Jovem	Jove
'old man'	senex	senis	sení	senem	sene
	senés	senum	senibus	senés	senibus
'meat'	caró	carnis	carní	carnem	carne
	carnés	carnium	carnibus	carnés	carnibus
'way'	iter	itineris	itinerí	iter	itinere
	itinera	itinerum	itineribus	itinera	itinera

et al.

Thus we have seen the contrast between the starkly regular conjugation of Latin verbs that is characteristic of type I paradigms and the irregularity of Latin noun declension that defines type II paradigms.

Now one might ask: is it really the size that correlates with type I and type II paradigms? After all the pattern in Latin is repeated in both Algonquian and Mixe-Zoquean languages. The verbs are regular and the nouns have quirks. But the answer is clearly no. There are languages in which noun inflection is quite regular, e.g. Spanish. Notice also that Spanish nouns form small paradigms, having only two points. Showing the asymmetry of the size type relation. This asymmetry can be summarized as in (13).

(13)

	large	small
Type I	+	+
Type II	—	+

By now students of Latin are probably squirming because there are, in fact, some irregularities in Latin verb inflection. Looking at them is instructive. Interestingly almost all of the irregularity in Latin verbs is centered on combinations of the stem plus the next morpheme immediately to its right (which is sometimes zero). Together these two morphemes together make up what are traditionally called the perfective and imperfective stems. Let me call the complex of a stem plus a morpheme from an immediately adjacent slot in the morphemic construction an *extended stem.*[9] The complete set of structurally identical extended stems constitutes an *inner paradigm.*

In Latin the inner paradigm of stem plus aspect marker is small, having two points, and it acts like a type II paradigm. It has numerous classes (upwards of thirty) and shows morphophonemic irregularity, as in (14).

(14)

	stem + imperfective	*stem + perfective*
'love'	amá-	amáv-
'tame'	domá-	domu-
'wash'	lavá-	láv-
'stand'	stá-	stet-
'advise'	moné-	monu-
'stay'	mané-	máns-
'bite'	mordé-	momord-
'rule'	reg-	réx-
'tear apart'	scind-	scid-
'do'	ag-	ég-
'allow'	sin-	sív-
and many others		

It shows irregularity in combinations with other morphemes (in this case prefixes), as in (15).

(15)

	stem + imperfective	*stem + perfective*
'gather, read'	leg-	lég-
but 'understand'	intelleg-	intelléx-
'buy, take'	em-	ém-
but 'take away'	dém-	démps-
'separate'	cern-	—
but 'distinguish'	discern-	discrév-

It has holes, as in (16).

(16)		*stem + imperfective*	*stem + perfective*
	'wish'	avé-	—
	'choke'	ang-	—
	'shake'	quat-	—
	'prop up'	amicí-	—
	'begin'	—	coep-

It has some idioms—extended stems that are perfective in form but imperfective in meaning, as in (17).

(17)	'remember'	memin-	(meminí, meministí, *etc.*)
	'hate'	ód-	(ódí, ódistí, *etc.*)

Having, I hope, made a convincing argument that there is a real difference between type I paradigm sets and type II paradigm sets, I will conclude by arguing that the difference between type I and type II paradigms is that type I paradigms, the type that are regular, are compositional (Anderson, 1977, 1982) but type II paradigms, the type that are irregular, are lexicalized (Jensen and Jensen, 1984).[10] From this follow the size correlates. If a paradigm set consists of large paradigms they must be compositional (for noetic reasons) and therefore will tend to be regular, as type I paradigm sets are. But if a paradigm is small all the points of all the stems could be lexicalized, or more likely, all the points of many of the stems could be lexicalized. Either way this would set up the initial conditions for irregularities of the sort we have seen are characteristic of the paradigms in type II paradigm sets. Furthermore there is no reason why a small paradigm *must* be lexicalized, thus there can be type I small paradigm sets.

Of course this report is preliminary in many ways. First the working definitions used here still appeal to the intuitions of the linguist rather than being mechanically rigorous.

Secondly languages differ widely in whether they have both types of paradigms and to what extent. On the one hand Altaic languages seem have almost only type I paradigm sets, even in derivation, while Germanic languages seem to major in type IIs.

Thirdly there is more subtlety to the difference between type I paradigm sets and type II paradigm sets than this brief overview suggests. When it gets refined the distinction boils down roughly to whether or not there are points in a morphological construction across which morphemic combination is regular.[11] Type I paradigms have such points. Type II paradigms don't. In fact I have a suspicion that the situation is even subtler. I would claim, in the spirit of natural morphology, that there is a tension between compositionality and lexicalization. In one direction the paradigms all warranted by the same morphological construction can be lexicalized one by one.[12] In the other lexicalized paradigms can be treated as though they were compositional yielding cases of analogy.

Lastly there is the very interesting question of how many points

there need to be in a paradigm for it to be large enough to force compositionality.

In conclusion, I would like to propose a reexamination of the prototypes of inflection and derivation in light of the type of theory of morphology espoused here—one which allows for both compositionality and lexicalization. Since derivation tends to involve small paradigms while inflection may involve either large or small paradigms, some of the prototypical properties of derivation follow from the predominantly lexicalized type of morphology they involve. On the other hand, the attempt to provide a contrastive prototype of inflection has lead to viewing inflection as prototypically compositional. I hope that having shown that compositionality is a parameter independent of the parameter of inflection/derivation will lead to a clearer characterization of the latter, very useful distinction.

FOOTNOTES

[1]This paper has benefited greatly from the comments of Karl Zimmer, Fred Lupke, Gary Holland, Arnold Zwicky, Michele Emanation, Jim Watters, and Dave Costa. All the usual disclaimers apply.

[2]Since I am approaching this by approximations, I will let the rather vague and intuitive notion of *word* slip by here. All that is important at this point is that paradigms be made of forms that native speakers find to be independently manipulable. In a more rigorous account more would have to be said.

[3]The question of how to define sameness among morphological constructions is a thorny one. For example, in the Latin examples given below, I will omit the imperative and non-finite forms of verbs because they participate in constructions different in detail from the finite forms, but intuitively it seems that they should be counted as part of the same paradigm. How to do this is not, at the moment, clear.

[4]The traditional notion of head could probably lead to a better approximation, but in view of the variety of uses of the term *head* current in linguistics today, I have decided to steer clear of it.

[5]The term *paradigm* is used ambiguously between the two senses that we are distinguishing here: *paradigm* and *paradigm set.*

[6]On close examination this property seems actually to be somewhat more difficult to characterize. The characterization is not that the morphophonemics are simple, just that they are regular. Furthermore the internal structure of the paradigm shell, that thing that is left when the stem is removed, may be morphophonemically irregular and/or problematic, and that doesn't negate the characterization of the paradigm as morphophonemically regular.

[7]It can be argued that derivation is different from inflection in that there aren't (or often aren't) real paradigms in derivation. To the extent that the best examples of paradigms neatly align meaning and form, derivationally related forms frequently don't provide very good examples of paradigms. On the other hand by using a formally based

definition of paradigm, any semantic incoherence and or morpheme slot optionality ceases to be a problem at this level. Thus we can look at both inflection and derivation together for our purposes here. Of course this is motivated by the existence of languages in which aspects of what is unquestionably derivation have all the formal earmarks usually associated with inflection (Algonquian verb stem derivation being one example). The desideratum is thus to have a system which will enable a uniform view of inflection and derivation at least for some purposes.

[8]Depending on how one treats the systematic homophony of dative and ablative plural, the count could be 11 forms.

[9]In fact this should be defined recursively, i.e. extended stems can be based on extended stems.

[10]It is worth pointing out that recent work by morphologists using Latin have chosen either to emphasize the regularities (e.g. Matthews, 1972, Williams, 1981, Lieber 1981) or the irregularities (Ford and Singh, 1985), but no one has considered a system in which both regularity and irregularity exist side-by-side.

[11]It cannot be overemphasized that regular does not entail simple. The morphophonemics could be quite intricate at the relevant point in the construction. All that is important is that it is regular.

[12]Or even subparadigm by subparadigm, where a subparadigm is the complete set of forms built on an extended stem. The result would be that there is a mixed type of paradigm set in which some of the paradigms act like they belong to a type I set and some like they belong to a type II set.

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Which Way Did They Grow:
(Morphology and the Austro-Tai/(Macro)Austric debate)

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In this paper I intend to look at the consequences of one formal instantiation of causative relations for the history and typology of the Southeast Asian linguistic area.[1] An examination of the labial causative affix (LCA) can help to solve a number of important diachronic and synchronic questions concerning the interrelationships among the languages of the area by establishing shared features and innovations. The first section will introduce the forms and function of the LCA in Southeast Asia. The middle part of the talk will briefly survey the existence of the LCA in the five major language groups, and the last part will discuss the significance of the LCA for the three major competing theories concerning the relationships between the language families.

In the past decades there has been a greater concentration on lexical comparison (including the glottochronology fad) and phonological data than on morphological and syntactic phenomena in historical work on Southeast Asian languages. In as complex an area as Southeast Asia, one cannot really trust lexical material, as borrowings, taboos, and other interferences (such as limited, and culturally inappropriate wordlists) weaken the arguments that can be constructed on those grounds. Phonological data is more useful, and has been the primary tool for determining genetic relationships among the languages of the area. Morphosyntax has been generally ignored, although it seems less susceptible to the problems cited for lexical materials, and changes seem to occur more slowly. This paper represents an attempt to use morphosyntactic materials to help sort out the history of the languages of Southeast Asia.

The LCA: Phonological forms

In the languages of Southeast Asia, here taken to include the Tibeto-Burman(TB), Tai-Kadai(TK), Austroasiatic(AA), Hmong-Mien(HM), and parts of the Austronesian(AN) languages, causativity is expressed in two ways. There are syntactic causatives, usually involving verb concatenation, and morphological causatives, involving an affix. These forms are surveyed in Schiller (1987).

The affix surfaces in a variety of forms. The most common form, seen in (at least) four of the five linguistic families, involves the articulatory feature [+labial]. I will take as a working definition the following:

(1) If a language has (or had) an affix with clearly causative function, and if the affix either contains a labial consonant or can be shown to have been diachronically derived from an affix which contains a labial consonant, that language is a **P-language**.

It is not possible to make definitive judgements about many languages of the Southeast Asian linguistic area, since we lack reliable sources for many, if not most, of the languages. The map on the handout shows the rough locations of P-languages on which I have been able to amass data[2]. At the outset, it should be noted that the affix usually surfaces as a prefix, occasionally as an infix, but never as a suffix.

The affix takes the following forms as a prefix: /p-/, /pn-/, /pr-/, /b-/, /ɓn-/, and shows up as infixed: -m-/. Epenthetic vowels take various shapes, which can be seen in the examples later in the paper, but which will be ignored in the following table:

Table 1: Forms of the LCA in Southeast Asia

Language	Location	/p-/	/pn-/	/pr-/	/b-/	/ɓn-/	/h-/	/m-/	/-p-/	/-b-/	/-m-/
Pear(Morizon)	31/32	x	x					x			
Khmu?	76	x	x								
Semai	10	x		x							
Temiar	11	x		x							
Siamese	301	x			?*						
Mon (Lit.)	25	x						?			
Angami	601	x									
Roglai	220	x									
Tagalog	220	x									
Ta'ang	105	x									
Katu	73	x									
Pacoh	75	x									
Bahnar	46	x									
KintagBong	19			x							
White Meo	501	?*									
Phalok	87	?									
Antisdel'sWa	84a	?									
Chrau	41		x								
Jah Hut	9		x								
Sre	40		x								
Khasi	109	?*	x		x?						
Samtau	85a		*								
Thavung	112	*			x						
Rengao	53				x						
Khmer	36		*			x					x
Karen	402							x			
Rade	204	*						x			
Chong	34							x			
South Munda	114								x		
Sora	115								x		
Mɔdra/Didrá	51										?*
Nancowry	3						x				x
	Forms	/p-/	/pn-/	/pr-/	/b-/	/ɓn-/	/h-/	/m-/	/-p-/	/-b-/	/-m-/

Legend:		
	x	affix exists in this form
	x?	may not be the same notion of causative (discussed below)
	?	affix may have existed in this form
	*	affix can be reconstructred as having had this form
	?*	as *, but with considerably less confidence

The numbers next to each language refer to the locations on the map.

The function of 'causativity' is here taken to be the relationship between such pairs as

English die/kill, arise/wake s-one up. Less clear cases will be discussed individually.

The LCA in each of the Five Families

In this section I shall rely more heavily on reconstructions of earlier stages of the languages. At this point you may find it useful to refer to the map on the handout.

Tibeto-Burman and Karen

Most Tibeto-Burman languages do not show evidence of the labial prefix. the most interesting exception is that of Karen, where the homomorphism of the causative prefix and auxiliary verb 'make' creates problems of analysis.

(1a) *Pho (Jones 1961)	*θì 'die'	*maθì 'kill'	
(1b) Karen (Blackwell 1954)		/θi/ 'die'	/maθi/ 'kill'

These raise a question of analysis, since Karen has a verb /ma/ which means 'make' or 'cause'.[3] Verb serialisation may be a more accurate analysis, though further etymological skullduggery is necessary to determine the source of the /ma/ morpheme. After all, it is also plausible that the LCA became detached and took on a status of full word as the languages drifted toaward monosyllabicity. There are many forms of causatives which are listed in the dictionary (Blackwell) beginning with /ma-/.Then there is Angami:

(1c)Angami	ɕiê 'die'	pêɕiê 'kill'

where again there is an independent verb (pê). /p-/ is not mentioned in the Sino-Tibetan Conspectus. Notice the similarity of the roots in Angami and Karen.

Austronesian

Stevens (1973, quoted from Starosta 1974) gave the following pattern for Austronesian languages:

(2a)NP - [causer]	*pa*-verb -	NP - [agent]	NP - [object]	NP [other case relations]

Synchronically, the /pa-/ prefix is found in a very large number of AN languages. Dahl (1973:118) notes that "Another prefix with very broad distribution is *pa-* which has causative character. It is found with this character from Polynesia to Madagascar, and is thus undoubtedly PAN."

/pa-/ is the form of the prefix as it appears throughout the Austronesian languages. The material presented below concentrates on those languages on and surrounding the Southeast Asian mainland, with other languages cited only to reinforce the widespread nature of the prefix, which shows up in canonical /pa-/ form, and as /fa-/ and /ha-/. Austronesian is one of the largest language families in the world, but there is only time to give a few examples:

The Formosan languages are considered to have split off early from the rest of Austronesian. It is therefore important that we find a wealth of examples here (Starosta 1974 contains many more[4])

(2b)Bunun	manaq 'shoot'	panaq 'shoot'
(2c)Bunun	mataɬ 'die'	pataɬɬ 'kill'

In Kalai-Kove, "/pa-/ marks causative aspect for all members of class B-la...." (Counts 1969:68) e.g.

(2d)Kalai-Kove	/-ani/ 'eat'	/pa-ani-ɣao-ri/'(I)-feed-(them)'

Nguna has /vaka/, but Schütz (1969) notes that the voicing is not relevant and that the /v/ is more often [f]. Examples:

(2e)Nguna	vura 'full'	vaka-vura'fill'
	susu'suck'	vaka-susu'nurse'

Tahitian (Arakin, 1981) has clear examples, e.g.

(2f)Tahitian	tai 'make a sound'	faàtai 'play an instrument'
(2g)Tahitian	maâ 'eat'	haàmaâ 'feed'

On the mainland, the Chamic group provides good examples:

(2h)Roglai	matai 'die'	pamatai 'kill'

Material provided by Lee indicates *Chamic causative /pa-/ in such examples as:

(2i) *Chamic	*jəŋ 'become'	*pajəŋ 'create';
(2j) *Chamic	*jum 'around'	*pajum'surround';
(2k)*Chamic	*klas 'release'	*paklas 'save'(rescue?).

but the roots are all loans, cf 2i and 5f. Prefix *pa- is preserved in Jorai /pə-/, Roglai /pa-/, and Cham /pə-/. Rade (Lee, ms.) has /m-/ as a result of historical /pə-/.

Austroasiatic

Within Austroasiatic we have evidence both as to the antiquity of the affix and to its widespread diffusion. Fortunately, the MK branch boasts two sources of older material, Old Mon and Old Khmer. As the following show, there is great geographical diversity.

Viet-Mường:

These languages are considered by some to be part of Northern Mon-Khmer, but by others as more distantly related to other Mon-Khmer languages.

Hayes (1983) gives Pre-Thavung		*paʔrip 'dampen' yielding
(3a)Thavung	balip[1] 'plonger' (dampen)'	(from Pre-Thavung *paʔrip)

The Mường languages are located in remote areas of the Red River Valley, and have a surprisingly conservative morphology which preserves disyllabic structures. They are therefore of considerable interest for the LCA question. Vietnamese is monosyllabic, but Ferlus (1975) has shown that pre-syllables can be reconstructed.

Northern Mon-Khmer:

/pən-/ is the common Mon-Khmer form, and may be Proto-Mon-Khmer in origin. It is a highly productive prefix in Khasi. This complex prefix has been the subject of considerable discussion by Henderson (1976) and Schmidt (1904). It became less decomposable over time and is now clearly to be treated as a single morpheme.

(4a) Standard Khasi:	iap 'die'	pyniap 'kill'
(4b) Standard Khasi:	hap 'to fall'	pynhap 'to fell'
(4c) Standard Khasi:	long 'to be'	pynlong 'to create'

Henderson (1976) notes that pyn- [/pən/] may be affixed to recent unassimilated loans. There is some evidence of a simple /p-/ prefix:

(4d) Khasi:	rung 'to enter (itr.)	phrung 'to penetrate (tr.)'

/p-/ alternates with /b-/ in this usage but the prefix is no longer productive.

Moving from Khasian to the Palaungic branch, the situation becomes more complex.

(4e) Ta'ang	yạ̄m 'die'	pyạ̄m 'kill'

Milne (1921:66): Kāng pyạ̄m pĕt ī mē 'Kachins killed the man' and (85): ạ̄n yạ̄m pwɔt 'It is quite dead' lit. it died away.

In the Waic languages most sesquisyllabic words lose their initial, unstressed affixes, liquids form clusters instead. The following pair, taken from two closely related Wa languages is encouraging.

(4f)	Paraok: hu̲c 'thin'	Palok: pʰu̲c 'to sharpen to a point'

That the initial /h/ reduces to aspiration is consistent with what is presently known about Northern Mon-Khmer historical phonology.

Even where the labial portion of the affix is gone, some reconstruction is possible, e.g.

(4g) Samtau (= Bulang):	yə́m 'die'	ʔəŋyə̀m 'kill'

According to Diffloth (personal communication), this form is a result of the erasure of the initial consonant from *pən.

The prefixes /p-/ and /pn-/ are well attested in Khmuʔ (Svantesson 1983):

(4h) Khmuʔ:	réh' rise'	préh' raise'
(4i) Khmuʔ:	yían 'black'	pǹyían 'blacken'
(4j) Khmuʔ:	nʌ̀ʌm 'happy'	pńnʌ̀ʌm 'make happy'
(4k) Khmuʔ:	ʔɨn 'moist'	pńʔɨn 'moisten'
(4l) Khmuʔ:	háan 'die'	pháan 'kill'
(4m) Khmuʔ:	làac 'disappear'	plàac ' take away'

Svantesson notes that the /pn-/ prefix is perhaps more productive in the Southern dialect recorded by Delcros than in his Yùan dialect.

Eastern Mon-Khmer:

(5a) Pacoh :	dêr 'shatter'	padêr 'cause to shatter'
(5b) Katu :	daloong 'to call'	padaloong 'cause to call'
(5c) Katu:	karuaq 'to hurt'	pakaruaq 'cause to hurt'
(5d) Rengao	hlat 'die'	boʰhlăt 'kill'
(5e) Bahnar	lôch 'die'	pəlôch 'kill'

Banker (1964) noted that "The causative prefix is apparently still active in Bahnar as seen in such new coinages as pə-ao-wi 'to make to hurt' from the English word owie (ouch). This prefix is used more extensively than the nominalizing infix but cannot be used freely."

(5f) Chrau	jêng 'become'	panhjêng 'create'

The abundant evidence from Modern Khmer is supported by historical record. According to Jacob (1976), /p-/, /pr-/, /pN-/, /tN-/, /-N-/, /-m-/ and /-mn-/ were common to both Old and Middle Khmer, while /k-/ was a Middle Khmer innovation. /p-/, /pr-/, /pN-/ and /-m-/ had causative function in Middle Khmer (p.603). Jacob suggests that there is insufficient evidence for determining grammatical functions in Old Khmer.

/ɓən-/ is a very widespread Khmer prefix, even though it is no longer productive. Historically, the implosive /ɓ/ derives from /p/.

(5g) Khmer:	/kɑɑ/ 'action'	/ɓaŋkɑɑ/ 'cause s-th to happen'
(5h) Khmer:	/kɑɑk/ 'solid'	/ɓaŋkɑɑk/ 'solidify'
(5i) Khmer:	/kəl/ 'move'	/ɓaŋkəl/ 'cause to move'
(5j) Khmer:	/cal/ 'be impeded'	/ɓaɲcal/ 'dam up, block'
(5k) Khmer:	/tɔəc/ 'cease'	/ɓantɔəc/ 'stop, interrupt'
(5l) Khmer:	/riən/ 'learn, study'	/ɓaŋriən/ 'teach'

In (5l) the root is a loan from Thai. Jenner & Pou (1981:lii), states that "- /bɑN-/...yields derivatives which are causative (73%) and factive (27%);"

Headley (1977) gives a Pearic vocabulary which contains the following examples of an LCA, noting that /am/ [am] is "probably a causative prefix":

(5m) Pear (Morizon)		/am-kam/ 'in order to'
(5m) Pear (Morizon)	/am-kriŋ/ 'to make thinner'	
(5n) Pear (Morizon)		/am-luən/ 'agile'
(5o) Pear (Morizon)		/am-phit/ 'to lose'
(5p) Pear (Morizon)		/am-raŋ čal/ 'to improve'
(5q) Pear (Morizon)	/snik/ 'light in weight'	/am-snik/ 'to lighten'

also:

(5r) Saoch (Veal Renh) /haoč/ 'die' /pənhaoč/ 'to kill'

and several candidates:

(5s) Pear (Morizon) /pəʔu:s/ 'to make (s-hing) turn sour'

(5t) Pear (Morizon) /pəphlip/ 'to submerge'

(5u) Pear (Baradat) /pəñčhaot/ 'to cheat s-one'

(5v)EasternPear /ɔ:ñ/ 'to reserve, keep'[5] /pəʔɔ:ñ/ 'to reserve, keep (for)'

Finally, a very interesting example from Chong

(5w) Chong (Huffman) /hooc/ 'die' /məhooc/ 'kill'

where Diffloth (p.c.) has no explanation for the /mə-/ instead of /pə-/.

SouthernMon-Khmer:
Old Mon provides us not only with good historical *p- material, but also offers interesting data on a *k- causative prefix which may help to explain the presence of that affix in a number of languages. This point is well discussed in Diffloth 1984:296ff.

(6a)Proto-Monic *dəw 'to go away' *pdəw:
Kyanz.OM‹(s)-pdow› 'to drive away'
Mid. Mon: ‹bdau› 'to drive away'
Liter. Mon: ‹padau, bdau› 'to drive away'

Furthermore, it may be that there is a *-p- infix, according to Shorto (1969), though, as pointed out by Diffloth (1984), we really don't have enough data to make any firm judgements here. Mon has a verb /pɑ̰ɑ̰ʔ/, meaning 'to do'. This is a similar situation to that of Karen, noted above. Look at the map. It should be noted that the length of the vowel casts doubt on the relationship between the independent form and the affix.

(6b) Kintag Bong: sa 'descend' pisa 'cause to descend'
(6c) Kintag Bong: tɛg 'sleep' pitɛg 'put to sleep'
(6d) Kintag Bong: ciʔ 'eats' piciʔ 'feeds'

Omar (1976) gives a section on /pi-/ with causative function (954-55). Diffloth (personal communication) advises that /pi-/ is a reflex of *pr-, so this example properly belongs below. It is perhaps relevant here that this form can acccept another prefix /maQ-/, which denotes 'the desiderative aspect'. Omar gives each of above forms with that additional prefix, and gives meaning 'wants to X cause to X'.

Diffloth (1976b) cites the form /p-/ as productive in Semai. There the prefix appears along with an infixed /-r-/

(6e)Temiar /caaʔ/ 'eat' /bɛrcaaʔ/ 'feed'[6]
(6f)Semai: /ciip/ /bərciip/

Diffloth (1976) cites the form as productive in Semai, where it is the product of a /p-/ prefix and an /-r-/ infix. But the derivation of these forms is not so simple. They are derived by taking the root, prefixing /p-/, dissimilating the /p/ to /b/, infixing /-r-/, and adding an epenthetic schwa. (Diffloth, personal communication)

(6g)Semai: /nɛɛŋ/ 'see' /pərnɛɛŋ/'show'

Rounding out the discussion of these Aslian languages I would like to point out out cases where a P-language applies the causative prefix even to borrowed roots, which sometimes conatin unusual (for the host language) morphology. A Khmer example was

given above, and a more stiking example follows, where there is a rare disyllabic root in Semai:

(6h)Semai: /tiba:ʔ/ 'to arrive' /ptiba:ʔ/ 'cause to arrive'
(cf. Malay tiba 'arrive)'.

In fact, all of the rare disyllabic roots take this form of the affix (Diffloth, personal comunication.

Moving to the more isolated languages of the Nicobar Islands, Nancowry (Radhakrishnan, 1973) provides a number of examples:

(6i)Nancowry: paʔəy 'bad smell' pumʔəy 'cause to have bad smell'
(6j)Nancowry: pirè: 'flat' pumrè 'cause s-thing to be flat'
(6k)Nancowry: paló? 'lose' pumló? 'cause s-one to lose s-thing'

It has been pointed out by Schmidt (1906) that in Nicobarese, the contemporary causative prefix /ha-/ is a reflex of /pa-/ by way of /fa-/.

Munda:
A labial affix is also in evidence in the other branch of Austroasiatic, i.e. Munda. In fact, Masica (1976:70) states that "The basic Munda causative sign (still extremely productive in Sora) would seem to be the prefix-infix AB- (=Sora Kharia = OB-, -B-). The /b/ of this affix usually assimilates to a consonant of the verbal root...This element exists vestigally in the Kherwarian languages also (Mundari *jom/ajom* 'eat/feed') but these languages have replaced it for productive purposes with a "suffixival" element."

/-b-/ surfaces as /-əb-/ in South Munda (N. Zide, personal communication), which also has a *əb- prefix. The infix occurs only in disyllablic words (C^1C^2...) where C^2 is a continuant.

Hmong-Mien

For HM, we must reconstruct proto forms, since the drift to monosyllabicity has eradicated all affixes. This task involves having a secure grasp of the tonogenesis in HM, and we can only draw very tentative conclusions. Martha Ratliff (1986) provides the following examples (among others):

(7a) White Meo : tuag [tü^{a6}] 'die' tua [tü^{a5}] 'kill'
reflecting a voicing contrast
(7b)*HM(Benedict) day 'die' tay 'kill'
with the reconstructions:
(7c) *PMY *tay< *(p/)tay < *[pa/]play "kill"
(7d) *PMY *day < *tay(initial voicing) "die"

(7e) cig 'alight' ci 'bright, brilliant, toast roast'

Tai-Kadai

Tai-Kadai, like Hmong-Mien and Northern Mon-Khmer, has undergone considerable erosion of di- and sesquisyllabic structures, leaving us to seek vestiges of affixes in the initial liquidclusters.

Benedict (1975) reconstructed *plian (alternating with *phrian) 'change, to exchange', cf. Lao *rian 'to buy (a field)'. There is a big problem here, in that Fang Kuei Li (1977) shows that *pr- → t-. Furthermore, <bpian2> 'change, buy' and <bpian1> 'exchange' form a tonally contrastive pair with more reciproical than causative relations.

To make matters more difficult, Proto-Tai *pr- becomes t- in modern languages, except in the Saek language[7]. Nevertheless, there is a little evidence for Thai:

(8a)Siamese	lúk 'rise'	plùk 'arouse, awaken'

This is not a loan from Khmer, as it surfaces in widely separated languages:

(8b)Lao:	bp^{3}uuk 'awaken'	luu^{2}k keuu^{6}n 'arise'
(8c)Lungchow:	pjuk 'to wake up (someone)'	
(8d)Po-ai:	pjɔk 'to wake up (someone)'	

Fang Kuei Li (1977) gives these as a reflex of Proto-Tai *pl-. Some futher examples:

(8e)Siamese:	larn 'to break/be broken'	pláarn 'to destroy'
(8f)Siamese:	lám 'to be superior'	plâm 'to wrestle'
(8g)Siamese:	lut 'lower, lessen'	plut 'unchain, unloose'
(8h)Siamese:	lɔ̂ɔn 'be divested of meat'	plɔ̂ɔn 'to extract'
(8i)Siamese:	lɔɔy 'flow, go adrift'	plɔ̀ɔy 'let go, release
(8j)Siamese:	lít 'to trim, prune'	plit 'to pick clean'

A few more examples of words with some causative semantics. No claims are made for these items, the result of a fairly superficial search in a couple ot Thai dictionaries, just the hope that some Tai specialists will look into these and the matter of:

(8p)Siamese:	plùuk 'to plant' , lŭuk 'child' cf. Tho: pjuuk
(8q)Siamese	phraaŋ 'to deceive, cheat'

(from Proto-Tai *br-, cf. Lungchow and Po-ai: phaaŋ, Ahom: phāng, Lao: phaaŋ, Dioi: piang 'to slander').

Austric vs. Austro-Tai vs. MacroAustric

Schmidt (1906, 1916), suggested that Austroasiatic and Austronesian be grouped together in an "Austric superstock". His evidence included the pa- prefix. Benedict (1975) attempts to establish an Austro-Tai superfamily, first proposed in Benedict (1942). He groups Austronesian, Hmong-Mien and Tai-Kadai languages together, suggesting that this Austro-Tai group bears a substratum relationship to Austroasiatic. Under this hypothesis the common feature of a labial causative prefix might well be expected to show up in the Miao-Yao languages as well as in Austronesian. (The Tai-Kadai problem discussed above remains, of course.) He rejects Austric on the grounds that (1975:484) "AT (Austroasiatic) and AT (Austro-Thai) do not have a core vocabulary in common, despite the morphological similarity of the two language stocks, hence the idea of an "Austric" superstock must be abandoned." Diffloth (1985) effectively demolished that argument on numerous grounds, including two "Austric" etymons for 'wood; and 'bone'

Our task is not made any simpler by the fact that HM languages, like TK, are strongly

monosyllabic without derivational or inflectional morphological processes. Even more disturbing is Benedict's cavalier treatment of tone, which can only be described in terms of benign neglect. Thus we cannot use his published data to reconstruct what are referred to above as "recoverable mergers". It should be noted that the exclusion of AA from the Austro-Tai hypothesis has already come under fire on other grounds (Diffloth 1977).

Recently some scholars have been investigating the possibility of a AA-AN-HM-TK supergroup, first suggested by Haudricourt, who never published his speculation. Gérard Diffloth (1985) calls this superstock "MacroAustric". The question requires much greater investigation, particularly within the Tai-Kadai and Hmong-Mien familes. Still, the Macro-Austric hypothesis makes a lot of sense. I am confident that further examples of TK causatives will be found to augment the small list presented here. The problems with the HM languages stem from the loss of material at the front of the word, probably a consequence of final stress, a feature shared with MK. The reduction in the size of morphemes is an areal feature of northern Southeast Asia, by contrast with the affixationally rich peninsular languages, Austronesian, and the isolates (Nicobarese, Munda).

The LCA is clearly quite old, based on its geographic dispersion and phonological changes. It was productive in early AA and AN languages, and, given the data from Munda, predates the Munda-Mon Khmer split. It seems reasonable to acccept the LCA as strong evidence in favor of Schmidt's Austric grouping. Benedict's Austro-Tai, however would have to suggest that the reason that the LCA is so abundant in AA and Austro-Tai is due to a substratum relationship with HM sharing that relationship. Ironically, this last problem arose through his own postulation of an LCA in HM. The Macro-Austric Hypothesis, is well supported by the given data, with phonological shape reflecting historical phonological changes catalyzed, perhaps, by the typological features which have allowed the southern languages to keep their rich morphology, the northern languages to lose the material at the initial part of the word, and providing a mixed bag in the central languages.

There are a number of phenomena which must be investigated before a claim can be made that /pa-/ "proves" the existence of a MacroAustric grouping. Nevertheless, if the present skimpy evidence showing the LCA in HM and TK can be augmented, The MacroAustrians will have taken a giant step forward, with the Benedictines suffering an important reversal. If we can establish MacroAustric as a Supergroup, we will then be in a position to engage in the formidable task of reconstructing the intermediate stages where AA, AN, HM and TK were dispersed. The examination of vestiges of morphological processes can help us considerably.

Notes

[1] Gérard Diffloth, Martha Ratliff and my fellow students at the University of Chicago have contributed meaningfully to this paper. They are not responsible for any errors of fact or reasoning.

[2] Unfortunately, for many languages we have nothing but a few word lists of the Swadesh type, containing at best the single causative pair 'die'/'kill'. Given the current political climate in Burma, Kampuchea, Vietnam and Laos, combined withlimited access to Yunnan Province in China, reliable data are unliikely to be obtained soon for most of the two hundred or so languages which would constitute an acceptable sample.

[3] This problem is not confined to Sino-Tibetan. Nyaheun (Davis 1973) has an

independent verb /mi/, and in some Wa languages (Zhou Zhi Zhi, personal communication) ther is an independent verb /pa/

4 "Pa- causatives also occur in all the Formosan aboriginal languages I have studied." (Starosta 1974:283)

5 'to put, place' is the general meaning, according to Diffloth (p.c.)

6 But it should be noted that /bɛr-/ is analysed as an allomorph of /tɛr-/ in positions before intitial /t-/ and /c-/. See G. Benjamin (1976), who states (p.168) that "the causative voice is formed variously by the infixation of /-r-/ or by prefixation of its allomorphs /tɛr- ; bɛr-/."The presence of /ɛ/ instead of the more normal epenthetic /ə/ is discussed in Diffloth 1976.

7 Fang Kuei Li (1977). The same problem affects Proto-Tai cluster *phl/r-. An additional example from that source is 'to split open, crack, separate': Siamese: phɛɛk, Lungchow: pheek, Wu-ming: plek. "This word is probably related to Siamese tɛɛk 'to break', from *pr-."

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ON SOME RECENT CLAIMS OF RELATIONAL GRAMMAR

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1. Introduction. Recent work in R[elational] G[rammar] has attracted considerable attention because of a number of interesting universal and language-specific claims that have been made with respect to inter alia passives, perfect auxiliaries, and the so-called Unaccusative Hypothesis. The aim of this paper is to challenge these claims and proposals, using data from German and Dutch. Instead of the largely formal, nonfunctional analyses offered by RG, we will present accounts based on transitivity and prototype theory. It is our contention that the RG proposals are misguided in attempting to provide formal syntactic solutions to what are essentially semantico-pragmatic problems.

2. RG and Passive. One of the important claims of RG is that it can provide valid and insightful universal characterizations of grammatical constructions such as passive. In the RG analysis passive is characterized by the advancement of a direct object or 2 to subject or 1, thereby causing the original 1 to lose its subjecthood or become a chômeur; in fact, it is claimed that chômage is always so motivated ("Motivated Chômage Law"). Cf. the passive versions (1c/d) of the German and Dutch sentences (1a/b).

(1) a. Die Terroristen zerstörten viele Häuser.
b. De terroristen verwoestten vele huizen.
'The terrorists destroyed many houses.'
c. Viele Häuser wurden (von den Terroristen) zerstört.
d. Vele huizen werden (door de terroristen) verwoest.

Now impersonal passives as in (2c/d) seem to offer prima facie counterexamples to this advancement analysis of passive (cf. Comrie 1977). Here it appears that an initial 1 has gone en chômage spontaneously, as depicted in the stratal diagram (A).[1] However, Perlmutter and Postal (1984b) claim that impersonal passives universally involve the insertion of a dummy element as a 2, which is then advanced to 1, as in (B). This of course saves the analysis.

(2) a. Die jungen Leute tanzen hier oft. b. De jongelui dansen hier vaak.
'The young people dance here often.'
c. Es wird hier (von den jungen Leuten) oft getanzt.
d. Er wordt hier (door de jongelui) vaak gedansd.
'There's often dancing done here by the young folks.'

In fact, it is contended that all sentences universally contain a final subject ("Final 1 Law"). Even sentences which do not appear to have even a dummy subject (cf. 3) are claimed to have "invisible" dummy subjects.

(3) a.Hier wird oft getanzt. b. Hier wordt vaak gedansd.

A.

P	1	Loc
P	Î	Loc
dance	young folks	here

B.

P	1		Loc
P	1	2	Loc
P	Î	1	Loc
dance	young folks	dummy (*es/er*)	here

Positing dummy subjects even where none are there looks like nothing more than an ad hoc trick of the linguist to salvage an analysis which is wrong; later I will argue that this is in fact the case here. Therefore, it is imperative that RG provide strong evidence for the claim that a dummy is inserted as a 2 and gets advanced to 1 in impersonal passives. The main argument given is that together with another universal principle, the "1 Advancement Exclusiveness Law" (1AEX) (cf. 4), the advancement analysis allows us to correctly predict the non-existence of certain passives.

(4) **1-ADVANCEMENT EXCLUSIVENESS LAW:** *The set of advancements to 1 in a single clause contains at most one member.*

Here the so-called U[naccusative] H[ypothesis] plays an important role. According to this hypothesis, there are two kinds of intransitive verbs, unaccusatives (which contain an initial 2 but no 1) and unergatives (which initially contain a 1 and no 2), and certain syntactic phenomena—such as passive and perhaps perfect aux selection—are sensitive to this distinction. It is thus correctly predicted that unaccusative verbs (5a/b) cannot passivize (cf. 5c/d) because their active subject already advances to 1 and in order to derive the passive here there would have to be a second advancement to 1 (cf. 5e), which is prohibited by the 1AEX.

(5) a.Heutzutage wachsen die Kinder schnell.

b.Tegenwoordig groeien de kinderen snel.

'Nowadays (the) children grow quickly .'

c.*Heutzutage wird (von den Kindern) schnell gewachsen.

d.*Tegenwoordig word (er) (door de kinderen) snel gegroeid.

e.

P	2	
P	1	
P	1	2
P	Î	1
grow	children	dummy

Thus, accepting the advancement analysis of impersonal passives together with the UH and the 1AEX, we supposedly have an explanation for these impossible passives. Similarly, these principles would preclude the possibility of impersonal passives of personal passives (6), so-called inversion clauses (7), and raising clauses (8), all of which already have an advancement to 1.

(6) a.Niemand wird von der alten Frau geküßt. b. Niemand wordt door de oude vrouw gekust. 'No one is kissed by the old lady.'

c.*Es wird von der alten Frau von niemand geküßt.

d.*Er wordt door de oude vrouw door niemand gekust.

(7) a.Der Wein schmeckt/gefällt ihm nicht. b. De wijn smaakt/bevalt hem niet. 'The wine doesn't taste (good) to/please him.'

c.*Ihm wird von dem Wein nicht geschmeckt/gefallen.

d.*Hij/Hem wordt door de wijn niet gesmaakt/bevallen.

(8) a.Maria scheint krank zu sein. b. Maria schijnt ziek te zijn. 'Maria seems to be sick.'

c.*(Von) Maria wird geschienen krank zu sein.

d.*(Door) Maria wordt geschenen ziek te zijn.

However, this analysis can be objected to on several grounds. First of all, the 1AEX is patently arbitrary, totally without external motivation. Why then should it exist and how do we in fact know that it exists? Even assuming for the moment that it correctly describes the data, it still does not really explain them. Moreover, since the principle itself is arbitrary, how would speakers come to have it? It hardly is learnable without trial and error and hence negative correction, which is very unlikely. The only alternative would seem to be that it is an innate linguistic universal, which seems equally implausible. Similar objections could also be directed at the Final 1 Law, the Motivated Chômage Law, and the existence of invisible dummies, especially in languages like Turkish where the dummy can never appear. How do speakers know they exist? Of course, if none of these exist, speakers would not have to know or learn about them. Also apart from the 1AEX, little evidence is offered in favor of the advancement analysis of impersonal passives. There is no independent evidence that passive dummies are inserted as 2s, other than they have to be in order to make the whole thing work. The little evidence given to show that the dummy is a final 1 concerns Indefinite Extraposition in Dutch and German (cf. Perlmutter and Zaenen 1984); in previous work (Shannon, to appear a) I have refuted this claim.

Moreover, RG proposes a lot of syntactic machinery, but to my knowledge has never shown how it would work correctly. Of course, many "details" such as case, prepositions, auxiliaries, finite and nonfinite verb forms, word order, etc. are simply ignored, but in the long run they can't be. Most importantly, how do we know that the (largely unformulated) syntactic rules would apply properly? Apparently rule features will be necessary to indicate when certain (minor?) rules like Inversion (which advances a 3 → 1 from a transitive [i.e. 1 + 2] stratum) apply and when other (major?) ones like Unaccusative Advancement do not, e.g. in German sentences like *Mich* [acc.] *friert/hungert.* 'I'm freezing/hungry.' *Mir* [dat.] *träumt/schwindelt.* 'I dream/am dizzy.' Furthermore, rules may have to be extrinsically ordered, e.g. to prevent passive from applying to Inversion verbs *before* Inversion. In light of the heavy criticism that rule ordering came under in the seventies, this is not an attractive possibility. In addition, it is not clear why elements which supposedly bear the same GR do not behave alike. For instance, a Î in the

passive acts differently from a Î in Indefinite Extraposition (cf. Shannon, to appear a): while the latter still acts like a true surface subject, the former does not (not in nominative, doesn't trigger verb agreement). Dummy 1s also act differently at times: the 'dummy' *es/er* in Indefinite Extraposition does not act like a subject (does not trigger verb agreement and in German can only appear in the prefield), whereas the dummy 1 with impersonal verbs is a different word in Dutch (*het* vs. *er*) and in both languages acts like a 1 (e.g. verb agreement and does not disappear in German when not in the prefield). The RG proposal of a "brother-in-law relation" here is only ad hoc handwaving to remove the apparent problem. If these elements are the same, why do they behave so differently? Relational grammarians have begged these questions long enough: the time has come for them to show how their theory would handle objections like these and, specifically, how they would ultimately derive the actual surface forms in a consistent, principled fashion.

Observe that if we do not accept the 1AEX the main motivation for the advancement analysis of impersonal passive is lost, since there is then no reason to believe that a dummy subject exists in such sentences. If an independent explanation for the non-existence of the above-mentioned passives can be found, then the dominoes of the theory start to tumble: there is spontaneous demotion and the Motivated Chômage Law and the Final 1 Law are both false, as is the universal characterization of passive as the advancement of a 2 to 1. In the next section we will propose just such an account, which casts serious doubt on all these proposed RG syntactic "universals".

3. An Alternative Account of Passive. Instead of a purely syntactic approach to passive, we advocate here a semantico-pragmatic one. Kirsner (1975:99) already offered a realistic formulation for passive in Dutch: the passive in Dutch, he claimed, backgrounds a relatively agentlike subject. It is important to note that *relatively agentlike* subjects are involved here, for Perlmutter and Postal (1984a:103) considered a semantic account of passive and found it wanting, but only because they merely considered a straw man—a limitation to purely agentive subjects. Kirsner's formulation avoids the obvious objections that they bring forth.[2] In particular, inanimate subjects of transitive verbs—the only type of counterexample cited by Perlmtter and Postal—can often quite easily be construed as natural extensions of the prototypical active animate agent subject to similarly potent, though inanimate entities. In fact, in the examples they give an animate noun could be substituted for the inanimate one given and in each instance the animate entity would be construe as very high in potency (i.e. an agent).

More recently, Shibatani (1984) has proposed a more detailed universal prototype anlysis of passive which enables us to correlate it with certain other constructions such as the reflexive, not just in morphosyntactic terms but also in terms of semantics and pragmatics. In Shibatani's view, the primary function of passive is the defocusing of an agent subject, which (we may add) is in fact usually omitted in personal passives and almost always left out in impersonal passives (cf. Drosdowski 1984:177ff.). Divergences from this schema can be seen as reflecting deviations from the prototypicality of the agent and/or the transitivity of the clause (cf. Hopper and Thompson 1980; Van

Oosten 1984, and now especially Rice 1987, Langacker to appear): passifizable active clauses are richer in transitivity properties—e.g. the verb is an action predicate denoting an effect brought about in the patient object by the agent subject acting on its own volition as a consequence of which the patient is in the resultant state. The active subject is human, a high potency (and therefore unaffected) individual separate from the patient object and is in control of and responsible for the action, its energy source. Conversely, the prototypical passive clause is then very much on the opposite end of the transitivity scale: it has no object, the subject is a patient and the predicate denotes a change undergone by the subject, who is not in volitional control of the situation. An agent is definitely implied, though usually not named; if so it bears a tangential relation to the clause in the form of an optional adjunct. Viewed against this semantico-pragmatic prototype, the admissability of passives is seen as dependent on the function of passive and the clause's transitivity and not merely a result of formal syntactic principles like the 1AEX. Therefore, it will be instructive to compare the two approaches and see how well they handle different instances of unacceptable passives.

4. On Explaining Unacceptable Passives. Grammars like the German *Duden* (Drosdowski 1984:182f.) or the Dutch *Algemene Nederlandse Spraakkunst* (Geerts 1984:1053f.,1058) point out several kinds of verbs which do not normally passivize. For example (*Duden*), intransitive verbs "whose personal subject is not the agent or instigator of the action" are not normally passifizable (9), nor are those which "can only be combined with an impersonal subject" (11-12).

(9) a.In den Tropen altert man schnell. b. In de tropen veroudert men snel.
'In the tropics one grows old dies quickly.'
c.*In den Tropen wird schnell gealtert.
d.*In de tropen wordt (er) snel verouderd.

(10) a.Sie ähnelt ihrem Bruder. b. Zij lijkt op haar broer.
'She resembles her brother.'
c.*Ihrem Bruder wird (von ihr) geähnelt.
d.*Op haar broer wordt (door haar) geleken.

(11) a.Diese Aussage beruht auf einem Irrtum. b. Deze uitspraak berust op een vergissing. 'This statement is based on an error.'
c.*Auf einem Irrtum wird von dieser Aussage beruht.
d.*Op een vergissing word door deze uitspraak berust.

(12) a.Es regnet/schneit/blitzt/hagelt. b. Het regent/sneeuwt/bliksemt/hagelt.
'It's raining/snowing/lightning/hailing.
c.* Es wird geregnet/geschneit/geblitzt/gehagelt.[3]
d.*Het wordt geregend/gesneeuwd/gebliksemd/gehageld.

Presumably RG would have to invoke the 1AEX in all these cases. The "unaccusative" verbs e.g. (cf. 5, 9) would fit in here—they are largely perfective patient-subject predicates— as would personal passives (cf.6) and raising verbs (cf. 8). Perhaps the subjects in (10-11) could also be analyzed as initial 2s and the verbs in (12) as some sort of unaccusatives or as having an inserted

dummy 2 which advances to 1, although I know of no independent evidence for such a claim. The 1AEX would then disallow passivization of such examples. But the unacceptability of all these passives follows straightforwardly from our prototype account without any such syntactic prestidigitation. Clearly, such clauses are very low on the transitivity scale: none of the verbs in question takes a (n accusative) direct object, and they all have a non-agentlike (e.g. patient or theme) subject. Semantically, (9) is in fact already very close to the passive prototype, except that there is no (implied) agent—it is a spontaneously occuring process, not the result of an action. Of course, if the verb is much higher in transitivity, e.g. *helfen* (which like *ähneln* takes a dative object—signalling a less affected object), then the passive is fine.

(13) a. Wir helfen dem Mann. 'We help the man.'

b. Dem Mann wird (von uns) geholfen.

Here the verb denotes a volitional action carried out by high potency individuals and thus passive is acceptable, even though the object is not directly affected, at least not according to German case marking (dative).

It has frequently been remarked, however, that some verbs which normally do not allow passivization (e.g. ones taking BE in the perfect like *bleiben* and *sterben*; cf. section 3) sometimes are used in the passive, especially in the spoken colloquial language, "in order to express an energetic order" (Drosdowski 1984:183), as in examples 14b/d below.

(14) a. Er ist hier geblieben. 'He (has) remained here.'

b. Es wird hier geblieben! 'Now (you'll) stay here!' [Duden]

c. Der Vater hat geschlafen. 'He (has) slept.'

d. Jetzt wird aber (*vom Vater) geschlafen! [Duden]

'Now there'll be some sleeping done (*by father)!'

e. Für den lieben König und Herrn wird alles getan, wird treulich gekämpft, wird willig geblutet, wird freudig in den Tod gegangen, für ihn wird mehr als gestorben... [Curme 1960:338]

'For the beloved king everything is done, battle is faithfully fought, blood is willingly shed, happily they march into death, for him more is done than (just) die...'

Of course, RG could handle cases like these by labelling the verbs in question alternatively unaccusative or unergative. In fact, noting the problematic nature of sentences like (14e), Perlmutter and Posal (1984b:11f.) propose such a solution, claiming (as part of their "Universal Alignment Hypothesis"; cf. Rosen 1984) that there is a difference in meaning which correlates with unaccusativity (non-volitional reading) vs. unergativity (volitional reading). But this move is completely ad hoc, for we do not seem to be dealing with homophonous verbs here. Moreover, it does not explain why these verbs frequently occur in this particular use of the impersonal passive as an indirect imperative nor why impersonal passives in general presuppose a human or at least animate (agentlike) active subject (cf. Heidolph 1984:551; Geerts 1984:1057).

Now in terms of our passive prototype, such clauses range toward the lower end of the transitivity scale, e.g. they do not have an accusative (affected) object and the subject is not agentlike; in fact, in (14e) the subject is clearly a patient. Note, however, that in (14b/d) the subject is not affected (no change of state in the subject), and in all these cases the event in question is viewed as somehow under the subject's volitional control. Thus the verbs in (14b,d) can easily be used in the imperative, and even *sterben* can be so used at times (cf. *Oh bitte, stirbe* [sic] *nicht!* 'Oh please don't die!' from the German comedian Otto Waalkes). The fact that the passive of such verbs is often used as an indirect imperative (in which case the agent apparently cannot be specified; cf. 14d) also follows naturally, since this use heightens the aspect of volitional control. Moreover, since there is no subject (impersonal passive), the event itself is foregrounded, not as something happening to an individual but as something the individual can choose to do/control, not something he undergoes but rather something he participates in. Finally, the agent restriction on impersonal passives is also understandable. Since they are based on non-prototypical actives with a single participant and thus do not foreground a patient, the agentivity required of the active subject is greater and thus restricted to humans, or at least animates; cf. Kirsner (1975) for a fuller, though slightly different account.

Turning next to transitive verbs, we again find impersonal verbs not passivizing, e.g. the impersonal expressions *es gibt, es setzt* in German (15-16), as well as verbs of knowing (17), verbs whose object denotes an amount/sum (18) or a relation (cf.7),[4] especially one of possession (19).

(15) a.Es gibt viele Tierarten. b. *Viele Tierarten werden gegeben.
'There are many kinds of animals.'

(16) a.Es wird Schläge setzen. b. *Schläge werden (davon) gesetzt werden.
'There will be blows.'

(17) a.Henk kennt alle. b. Henk kent allen. 'Henk knows everyone.'
c.*Alle werden von Henk gekannt. d. *Allen worden door Henk gekend.

(18) a.Das Buch hat zehn Dollar gekostet. b. Het boek heeft tien dollar gekost.
'The book cost ten dollars.'
c.*Drei Dollar wurden von dem Buch gekostet.
d.*Drie dollar werden door het boek gekost.

(19) a.Ihr Freund hat/besitzt ein Vermögen. b. Haar vriend heeft/bezit een vermogen. 'Her friend has/owns a fortune.'
c.*Ein Vermögen wird von ihrem Freund gehabt/besessen.
d.*Een vermogen wordt door haar vriend gehad/bezeten.

Presumably RG would account for these restrictions by appealing to the 1AEX once again. Verbs like those in (7) are analyzed as "inversion verbs" whose initial 1 becomes a 3 and whose initial 2 then advances to 1 (cf. Perlmutter and Postal 1984a:113f.), the 1AEX then precluding further advancement to 1 through passive. I am not certain how RG would handle the other cases—perhaps they too are some sort of inversion verbs; I assume this can be done, but not in a natural and non-arbitrary manner. Our analysis, on the

other hand, accounts for these facts too, but in much more direct, motivated, and plausible fashion by tying them to the pragmatic/semantic function of passive and the meaning of the clauses (particularly the verbs) in question. The restrictions encountered here are as expected, since these are low transitivity clauses (non-agentlike subjects, non-affected object, verbs expressing static relations not actions, etc.) and hence do not passivize.

One especially peculiar restriction with transitive verbs is the following: verbs with an (accusative) direct object which denotes a part of the subject's body do not passivize (Drosdowski 1984:182; Geerts 1984:1054).

(20) a.Ich schüttelte den Kopf. b. Ik schudde het hoofd.
'I shook the [my] head.'
c.*Der Kopf wurde von mir geschüttelt.
d.*Het hoofd werd door mij geschud.

Observe that these verbs normally present no obstacle to passivization, provided the object in question is not a body part belonging to the subject.

(21) a.Die Frau schüttelte die Flasche. b. De vrou schudde de fles. 'The woman shook the bottle.'
c.Die Flasche wird (von der Frau) geschüttelt.
d.De fles werd (door de vrou) geschudt.

In fact, the passive sentences in (20c/d) are perfectly acceptable if it is not the speaker's head that is being shaken, but, say, a detached part of a statue or perhaps a macabre war trophy. Why should there be such a restriction? As far as I can see, RG has nothing to say about such cases, although something could probably be cooked up. In our view, however, this restriction is quite natural: the prototypical agent is separate from the patient and in fact unaffected by the action. This is only true in an example like (20c/d) if the head in question is not his own; this explains why the passive is only acceptable here on this reading. If the subject is identical or partially identical with the object, then passivizing will not really defocus the agent; nor will it focus on a separate patient. It must be considered a great advantage of our analysis that it can handle this at first seemingly bizarre restriction in a non-abitrary, non-ad hoc fashion without further adjustment.

The just-mentioned observations can also help us with the following generalization: reflexive verbs normally do not allow passivization (cf. Drosdowski 1984:183; Geerts 1984:1053).

(22) a.Peter wäscht sich. b. Piet wast zich. 'Peter washes himself.'
c.*Von Piet wird sich gewaschen. d. *Door Piet wordt zich gewassen.

(23) a.Sie freuten/ärgerten sich über das Kind. b. Zij verheugden/ergerden zich over het kind. 'They were happy/angry about the child.'
c.*Über das Kind wurde sich von ihnen gefreut/geärgert.
d.*Over het kind werd zich door zij verheugd/geërgerd.

(24) a.Die Tür öffnete sich. 'The door opened.'
b.*Von der Tür wird sich geöffnet.[5]

This restriction falls out naturally from our analysis: since reflexives refer back to the subject, they render the subject an affected entity which is not separate from the patient object—therefore not a suitable candidate for passive. Since the subjects are affected, reflexive constructions are similar to passives already—even more so, the less agentlike (potent) the entity in question is. In the above examples we see something of a cline of potency until in (24a) the subject is hardly potent at all; in cases like these the reflexive construction is used to express spontaneous events, those which are normally brought about by an agent but are being viewed atypically as occurring without the intervention of an agent, as if the patient brings it about itself. Note also that in such reflexive examples an agent may never be mentioned. It is not clear how RG would handle these cases, particularly (22), which is neither an unaccusative clause nor a reflexive passive, as far as I can see. Example (24) could possibly be regarded as a reflexive passive: here plain passive could not apply due to the 1AEX. However, it is not clear to me how to distinguish Perlmutter and Postal's "reflexive passives" from other reflexives, especially since the only example ever given (*Solche Sachen sagen sich nicht.*) is rejected by my informants. Examples like (22), on the other hand, might be analyzed as unaccusatives (cf. Perlmutter and Postal 1984b:157 on *sich ärgern*).

Observe, however, that reflexive verbs may sometimes be passivized (at least in German, though not in Dutch!).

(25) a.Jetzt wird sich hingelegt/gewaschen! 'Now (you'll) lie down/get washed!'

b.Hier wird sich nicht geärgert/gelangweilt/bewegt!

'There'll be no anger/boredom/movement here!'

c.Da wurde...in zitternder Angst sich verkrochen.

'Then there was crawling away in trembling fear.' [Curme 1960:338]

Such examples are of great interest since they present problems for any analysis: why are they possible, while generally passives based on reflexives are not? Observe that as usual these impersonal passives presume a human agent, which, however, cannot be mentioned in this usage. The reflexive construction is typically passivized in spoken colloquial speech as an indirect imperative: we observed earlier that this construction foregrounds the event itself, highlighting the volitional/control aspect and thus heightening the agentlike (potency) properties of the entity in question and playing down its affectedness, i.e. its has the reading of increased transitivity.[6] Note that when it is difficult to imagine the thing in question as under some sort of volitional control, the sentence becomes bizarre.

(25) d.?*Hier wird sich nicht erkältet!

'There'll be no catching colds here!'

These reflexives are restricted to third person forms only; this is because only here is the agent actually defocused. Moreover, in (25c) another aspect of transitivity—intensity—is highlighted by the use of the phrase *in zitternder Angst*: this event is an intense reaction to external pressure. All of this is not handled in the RG analysis, as far as I can see; in fact, sentences like (25b), which RG would apparently analyze as containing unaccusatives, should never allow passivization, although they clearly at times may.

5. Passivizability and Perfect Auxiliary Selection. Finally, I would like to consider here a related set of questions concerning the perfect auxiliary. In both languages the perfect aux is either HAVE (*haben/hebben*) or BE (*sein/zijn*). What principles govern the aux selection and what connection, if any, is there with passifizability? First of all, it can be noted that in German and Dutch most intransitive verbs which form their perfect with *sein* cannot be passivized. How can we explain this correlation? Moreover, the BE-aux verbs seem to form a subset of the intransitives which looks suspiciously close to the unaccusatives. It would be attractive if somehow these observations could be tied together so that both the aux chosen and the inability to passivize follow from the same property. Perlmutter (to appear; cited in Rosen 1984: 46) in fact offers an analysis of perfect aux selection for Italian based on GRs, though not for German and Dutch. Hoekstra (1984), however, puts forth a very strong hypothesis—mainly for Dutch, but also by implication for German—that unaccusative predicates select BE and unergatives HAVE. He furthermore claims that "[w]hereas the unaccusative verbs do not allow the formation of impersonal passives, intransitives that select *hebben* as their temporal aux freely allow it." Examples such as (26-29) are supposed to bolster this claim.

(26) a.Die Kinder sind da geblieben. b. De kinderen zijn daar gebleven.
'The children stayed there.'
c.*Es wird (von den Kindern) da geblieben.
d.*Er wordt (door de kinderen) daar gebleven.

(27) a.Das Wasser war bald verdampft. b. Het water was vlug verdampt.
'The water had soon evaporated.'
c.*Es war bald (durch das Wasser) verdampft worden.
d.*Er was vlug (door het water) verdampt.

(28) a.Ein Kind hat lange geweint. b. Een kind heeft lang gehuild.
'A/One child cried for a long time.'
c.Es wurde lange geweint. d. Er werd lang gehuild.

(29) a.Man hat oft darüber gesprochen. b. Men heeft vaak daarover gesproken. 'People have often talked about that.'
c.Darüber wird oft gesprochen. d. Daarover wordt vaak gesproken.

Thus Hoekstra establishes the tightest possible connection between unaccusatives, BE-aux, and passivifizability; unfortunately, however, this claim, though in many instances correct, does not hold water fully. Moreover, even if it were correct, it offers no explanation for the facts. Observe first of all that there are HAVE-aux verbs which do not allow passive, pace Hoekstra; cf. Fagan (1986).

(30) a.Der Vortrag hat stundenlang gedauert.
b.De lezing heeft urenlang geduurd.
'The lecture lasted for hours.'
c.*Es wurde stundenlang gedauert. d. *Er werd urenlang geduurd.

(31) a.Das Kind hat gestunken. b. Het kind heeft gestonken.
'The child stank.'
c.*Es wurde (von dem Kind) gestunken.
d.*Er werd (door het kind) gestonken.

Furthermore, as noted previously for German (cf. 14a/b), there are cases of BE-aux Dutch verbs which may at times passivize; cf. (32a-d) from Geerts (1984:1058) and (34e) from Perlmutter and Postal (1984b:110).

(32) a.Wordt er nu nog begonnen, of hoe zit dat?
'Is it going to get started or what?'
b.Wordt er vandaag noch naar huis gegaan?
'Is there going to be any going home now?'
c.En nu wordt er ingeslapen!
'And now there's going to be some sleeping (done)'
d.Daar wordt koortsachtig geleefd en gestorven.
'There living and dying are carried out at a feverish pace.'
e.In het tweede bedrijf wordt er door de nieuwe acteur op het juiste ogenblik gevallen. 'In the second act there was falling by the new actor at the right moment.'

Just as with their German counterparts, these Dutch examples occur in contexts which accentuate their transitivity, especially volitionality, which is again what we would expect given our analysis. As noted earlier for German, such impersonal passives are frequenly used as an indirect imperative ("to indicate a strong wish": Geerts 1984:1058), as in (32a-c). In fact, Perlmutter and Postal point out that if volitionality is not presumed in examples like (32e), the passive is out. However, volitionality is not the only factor involved in heightening transitivity, as (32d) shows, first of all because living and dying are not (viewed here as) volitionally controllable, and secondly because the context here refers to underwater life, which is not close to the agent prototype. In this example (32d) , however, the activity is particularly intense, as indicated by the adverb *koortsachtig*, and the entity is thus viewed more as a participant than just an undergoer. Although examples like these are problematic and unexplained in analyses which strictly link passivifizability to HAVE-aux verbs, they do not cause such problems for our approach. But we still have not offered an account of BE-aux verbs and their normal lack of passivifizability. We turn next to this question.

6. Toward a Prototype Account of Perfect Aux Selection. Basically I would like to consider perfect aux selection in terms of prototypes: prototypical HAVE-aux verbs are very high in transitivity, whereas BE-aux verbs are low in it, with HAVE often the default for unclear cases (e.g. many statives). Specifically, prototypical BE-aux verbs are single participant perfective predicates denoting the beginning or end point of a change which the patient subject non-volitionally undergoes and which is not (conceived of as) brought about by another agentlike entity. This is the rationale behind the traditional claim in grammars of German and Dutch that BE-aux verbs typically express a change of state or place (Curme 1966 calls such verbs "mutatives"). Thus,

prototypical HAVE verbs should easily passivize, while prototypical BE verbs should not, since they already have a patient subject. It is only when the clause is more transitive, when the active subject can also be viewed as agent-like —e.g. has [some] volitional control over the event—that a passive becomes acceptable with BE-aux verbs, e.g. verbs denoting locomotion.

However, the farther away from the prototypical extremes one gets, the more room for variation we find. It is clear that in a number of non-prototypical cases there is room for differences of interpretation, since the criteria are "fuzzy" and allow for varying possibilities of construal. This is perhaps best seen in cases where a given verb can take either HAVE or BE, but with fairly clear semantic differences which correspond to our prototypes (cf. Curme 1960:287ff., Drosdowski 1984:121ff., Jørgensen 1966:32ff. for German; Geerts 1984:518ff. for Dutch). In both languages we find many transitive/causative versus intransitive/resultative verb pairs such as *auftauen/ontdooien* 'to thaw', *brechen/breken* 'to break', *heilen/genezen, helen* 'to heal', *reißen/scheuren* 'to tear', *schmelzen/smelten* 'to melt', *trocknen/drogen* 'to dry', *verderben/bederven* 'to spoil', *verbrennen/verbranden* 'to burn (up)', *ziehen/trekken* 'to pull, move', etc. Here the verbs relate very closely to the opposite prototypes and therefore take the corresponding perfect aux (cf. 33).

(33) a.Er *hat* das Eisen gebrochen/geschmolzen.

b.Hij *heeft* het ijzer gebroken/gesmolten.

'He has broken/melted the iron.'

c.Das Eisen *ist* gebrochen/geschmolzen.

d.Het ijzer *is* gebroken/gesmolten.

'The iron broke/melted.

Moreover, there are a number of intransitive verbs in both languages which can take either HAVE or BE: HAVE is used when the duration of the action or event is focused on, whereas BE is found when the completion or result is the focus (cf. 34). This list appears to be much larger in German, where it includes verbs such as *altern* 'to age', *bleichen* 'to bleach, fade', *faulen* 'to rot', *gären* 'to ferment', *heilen* 'to heal', *reifen* 'to ripen', *trocknen* 'to dry', etc. as in (35) (cf. Curme 1966:290). Note also that several of these verbs also have transitive counterparts, which of course only take HAVE.

(34) a.Es *hat* heute nacht gefroren. b. Het *heeft* vannacht gevroren.

'There was a frost last night.'

c.Das Wasser *ist* zu Eis gefroren. d. Het water *is* tot ijs gevroren.

'The water has frozen to ice.'

(35) a.Onkel Harre...*hatte* in der letzten Zeit so merklich gealtert, daß...

'Lately Uncle Harre had aged so noticeably that...'

b.Obgleich sie furchtbar gealtert *war.* 'Although she had aged terribly.'

c.Die Wunde *hat* gut/*ist* geheilt. 'The wound healed (well).'

In addition, intransitive verbs of motion normally take BE in both languages, because even though the subject may act under his own power, the

view is toward his being affected in the sense of changing his position—especially if a goal is mentioned. However, for at least some verbs in both languages HAVE or BE can be used in the perfect, depending on whether the emphasis is on the change of position toward a goal or simply on the activity involved. This leads to well-known contrasts as in (36).

(36) a.Viele Leute *haben* getanzt. b. Vele mensen *hebben* gedansd.
'Many people danced.'
c.Die Kinder *sind* nach draußen getanzt.
d.De kinderen *zijn* naar buiten gedansd.
'The children danced outside [= goal].'

Similar examples can be found with any number of other verbs of motion in both languages: HAVE places emphasis on the activity itself continuing in time (non-perfective; cf. 37a/b), as opposed to attaining an endpoint or directional goal (perfective; cf. 38), which also correlates with the occurrence of different adverbs. However, the tendency with pure verbs of locomotion seems to be to use BE always.

(37) a.Ich *habe* stundenlang geschwommen/gerudert.
b.Ik *heb* urenlang gezwommen/geroeid.
'I swam/rowed for hours.'

(38) a.Ich *bin* zur anderen Seite geschwommen/gerudert.
b.Ik *ben* naar de overkant gezwommen/geroeid.
'I swam/rowed to the other side.

Finally (cf. Jørgensen 1966:34), when the subject of verbs of motion like *fließen* 'to flow', *laufen/rinnen* 'to run', *tropfen* 'to drip' denotes the entity which moves (i.e. patient/theme), as is normally the case (cf. 39), the aux is BE (and furthermore, we can note, if the subject is human, e.g. with *laufen*, the clause may passivize!). However, when these verbs are found with a "transposed subject" indicating the source/location (cf. 40) instead of the patient or theme, then the aux is HAVE (and, we note, passive is not possible!), since the meaning then corresponds more to that of the HAVE-aux type (non-affected subject, durative).

(39) a.Der Wein *ist* aus dem Faß gelaufen/geronnen/geleckt.
'The wine ran (flowed)/leaked out of the keg.'
b.*Vom Wein wird aus dem Faß gelaufen/geronnen.
c.Das Faß *hat* gelaufen/geronnen/geleckt.
d.*Vom Faß wird gelaufen/geronnen/geleckt.

(40) a.Das Wasser *ist* auf den Boden getropft.
'The water dripped onto the floor.'
b.*Vom Wasser wird auf den Boden getropft.
c.Der Wasserhahn *hat* getropft. 'The faucet dripped.'
d.*Vom Wasserhahn wird getropft.

There are many more cases of aux selection which merit discussion here. Interesting differences are to be found within the same language between

dialects, e.g. the German positional verbs *liegen* 'to lie', *sitzen* 'to sit', and *stehen* 'to stand', which in the North take HAVE but in the South BE; between closely related languages like German and Dutch, e.g. verbs denoting a beginning or end, which take HAVE in German but BE in Dutch; and finally between languages of less closely related families such as Germanic and Romance, e.g. in reflexive clauses, which take HAVE in Germanic but BE in Romance. There also remain some verbs which apparently represent quite marked exceptions to the prototypes, e.g. *sein/zijn* 'to be', *bleiben/blijven* 'to remain'), which take BE, and in Dutch there are even some apparently transitive verbs which take BE in the perfect, e.g. *verliezen* 'to lose', *vergeten* 'to forget', *volgen* 'to follow'. Possibly such synchronic exceptions can only be explained historicallly (cf. Shannon to appear c). Lack of space, however, precludes here the discussion which such examples warrant. Suffice it to say that the predicates in question are not prototypical BE-aux or HAVE-aux verbs and the differences seem to have arisen due to the fuzziness of the criteria in such nonprototypical cases which leads to different possible construals.

7. Conclusion. In this paper we have shown that the 1AEX proposed by RG to account for the lack of certain passives is not necessary since the same data (and others) can be accounted for in a much more natural and plausible fashion. Instead we have proposed a prototype analysis of passive as defocusing agentlike active subjects and thus being sensitive to the transitivity properties of the clause in question. This alternative approach was seen to be superior to that of RG both empirically and in terms of its explanatory value. Since the 1AEX essentially provided the only evidence in favor of the so-called advancement analysis of impersonal passives, we also have indirectly brought the latter analysis, as well as the laws and principles which interact with it—viz. the Motivated Chômage Law and the Final 1 Law—into serious question. In addition, in place of the analysis of perfect aux selection in terms of unaccusativity, a prototype analysis was given here: prototypical HAVE-aux verbs are very high in transitivity, whereas prototypcial BE-aux verbs are low in it. This also helps explain the noted frequent, though not necessarily exclusive correlation between BE-aux and lack of passifizability: since BE-aux verbs are typically low in transitivity (especially: they have patient-like subjects), they should not normally undergo passive, which defocuses agent-like subjects. In general, it seems that RG suffers from the same problem of other autonomous syntactic theories: in looking for interesting syntactic accounts one does not try very hard to pursue alternative semantic explanations, even when the data beg for such an explanation. I hope to have shown here that such alternatives definitely can and should be pursued.

NOTES

1. For typographical reasons I use boxlike stratal diagrams instead of the standard arc-shaped ones; for convenience I also use English glosses to stand for the German and Dutch lexemes in question. Note also that many of the examples given here are taken from or modelled after those in the literature, although the sources are not always indicated.

2. The same holds true for Perlmutter's (1981, 1982) arguments against formulating verb agreement in Achenese in semantic terms. Pace Perlmutter, it appears that the Achenese verb agrees with the most agentlike entity in the clause down to but not including the very low end of the spectrum, i.e. patients. This accounts for the fact—which Perlmutter (1982:297) finds puzzling—that the predicate 'to sleep' has agreement, but 'to be asleep' does not; clearly the former is to a certain extent volitionally controllable, whereas the latter is not. Cf. Shannon (to appear b) for more on control.
3. Heidolph (1984:551) points out that such verbs may indeed passivize, but only—as we would expect from our analysis—if a personal agent is presupposed, as in (i), which is based on a sentence like (ii).

   (i). Es wurde gegen die Tür gedonnert. 'There was thundering against the door.' (ii). Er hat gegen die Tür gedonnert.
4. Note that the verbs in (7) are not strictly speaking transitive (i.e. ones taking an accusative direct object), at least not in German.
5. Such a passive would violate the restriction against inanimate agents in impersonal passives. Note also that the corresponding Dutch verb is not reflexive, but it still does not passivize, due to its patient subject.

   i. De deur opende. ii. *Door de deur werd geopend.
6. In a sense perhaps the reflexive object is here incorporated into the verb, as is possible elsewhere in German (as opposed to Dutch) as in (i) (from Curme 1960: 338), where the verb does not agree with the apparently non-advanced active objects; note that in the last part the object is even written together with the verb as one word.

   i. Unter diesen wurde [sg.] fleißig Karten [pl!] gespielt, gemäßigte Parkpromenaden [pl.] gemacht...und unabsehbar viel 'kannegegossen'.

   'Among these [folks] there was diligently played cards, leisurely walks in the park taken...and a lot of "can pouring" [= political bantering] done.'

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Pragmatic Constraints on Hopi Narrative Discourse

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The model for narratives developed by Labov and Waletzky (1977) for personal narratives and successfully adapted for fiction, a non-oral type, by Pratt (1977) has shown to be inadequate in describing a certain type of oral narrative, the Hopi coyote story (Shaul et al 1987). Hopi coyote stories usually lack an evaluation section (evaluative devices occur instead throughout the fabric of the story) and a coda. Further, the coyote story is always structured as a journey. Below, the two schemes are compared.

(1) Abstract-Orientation-Complicating-Evaluation-Result-Action

Coda

(2) Setting-Coyote's Want-Plan-Journey-Realization-

Backfire

In (1), the Labov and Waletzky plan is given; the Shaul et al formulation is in (2). The job of a narrative, the world over, is to relate a memorable series of events centering around a conflict/situation and some consequent resolution/results. These two basic requirements are realized in both story types.

The distinctiness of Hopi narratives from those of Western tradition is perhaps due to pragmatic features attending the original use of the narratives within Hopi culture. Narratives were performed and the teller and audience interacted to create intertextuality; the need for verification of the genuineness of the tale (evaluation section) and summary (coda) were less needed. In addition, the fact that Hopi stories were never set pieces suggests that the probability of evaluation was largely a matter of individual style, rather than an institutionalized section required in order to create a bonafide narrative.

The coyote stories in Malotki and Lomatuway'ma (1984, 1985) correlate fairly well with the model in (2). There are two major modifications in order: (a) some narrative components (Coyote setting out on a journey and returning home) are optional because in some stories, Coyote happens upon a situation in progress which is intriguing, and (b) Coyote sometimes dies away from home.

There are at least three folkloric functions that must be accommodated by the narrative format. These are given in (3).

(3) There is always a journey; there may be more than one, but Coyote is always on one of them.
Some home base is always involved, not always Coyote's.
Coyote's curiosity always ironically backfires.

There may be more than one journey, but Coyote is always traveling. The stories take great stock in the home bases of both protagonist and antagonist. The trickster nature of Coyote generates ironic expectations throughout the story, helping to account for the lack of a discrete evaluation section.

Do narrative sectional boundaries match the story components given in (2)? There is one linguistic marking (deixis) which is used in Hopi discourse to mark the boundaries of subunits of a discourse. Mention of entities at the beginning of a section is with proximal deixis, whereas subsequent mention or repetition of the same entity within a section is marked with distals. An example of this is found in (4).

(4) III-9 paniqw nu' YANGQW YANWAT pu' oovi antsa umuy Hopiituy IT YAN maatsiwqat McDonalds

consequently FROM:HERE THIS:WAY I that's why indeed (to) you Hopis (announce) THIS, THIS:WAY for McDonalds

III-13 ...put novakit aqw... McDonald pam hapi aasakis

...into that restaurant... McDoanld that one truly regularly (fixes food)

The Roman numerals refer to section numbers; the Arabic numerals refer to major sentence units. Proximals are in caps, and distals are underscored. The first mention of McDonalds and its location (Winslow, Arizona) are marked with distals. Subsequent mention of them (on line 13 later on in the section) is distal in marking. The same process carries over into Hopi coyote stories.

In Appendix One, a text from Malotki and Lomatuwa'ma (1984:2-7) is given in skeletal form. Each section begins with proximal marking (i' 'this, it 'this (OBJ), yan'this way', yep 'here' etc.). The extreme beginning and end are so marked. The second instance of proximal marking ("Pay yantsaki yaw puma'ay...") marks the start of the section that sets the story. The next instance ("Pay pi yang oova i' tuve'tsoki...") marks the start of Coyote's scheme, and the next proximal marking ("Yan yaw pam put ngemnat...") marks the

journey of Coyote back to his home and the hatching of his scheme. The last instance of proximal marking before the end ("Son pi nu' kwaats qa tuwat...") marks the beginning of the section where Coyote's scheme is realized and backfires. The sequence (Beginning-Setting-Set Up-Journey-Realization-End) agrees with that proposed in (2).

Longer texts modify the basic pattern shown in (2). Analysis of a longer story, given in outline in Appendix Two, shows that there are more than six sections. However, after the initial setting (section 1), Coyote's scheme (section 2) is followed by an extended Plan sequence (sections 3-7) ending with a journey (sections 8-9). This is followed by a backfiring (section 10) with subsequent resolution (sections 11-13). Section 13 may be analyzed as a coda, although it recapitualtes the content of sections 11 and 12 (11/12: The Oraibis send a youth after Coyote who finds him dead; the youth completes Coyote's journey, and the clouds return to rain; COMPARE this with section 13: in this way, rain returned to the Hopis).

Within a section, remention of a proximally marked item is with distal, just as in (4). So for example, in section 2 of the story sketched in Appendix Two, 'the clouds' are proximally marked as is their location (the Grand Canyon), and subsequent mention of them in the very next line appears as distal for both the entities and their location.

(5) yaw IMA OO'OMAWT YEPEQ ʊngtupqawveq ki'yyungwa...

'they say THESE CLOUDS OVER:HERE at Grand Canyon were living'

pay kya as pam pangsoqnen paalayamuy pumuy amumi paalayamuy oovi tuuvingtaqw
pay kya yaw as puma naanakwhe' angqw yoknawisni

may if he went there to ask them for their juice then just maybe they would assent and from there go to make it rain' (Malotki and Lomatuway'ma 1985: 106)

In the translation (mine, not Malotki and Lomatuway'ma's), the pattern appears in miniature: initial mention of 'clouds' (and their location!) is marked with proximals (ima 'these', yepeq 'here (DISTAL)'); note that a distal form of the proximal yep 'here' is used. The next mention of the clouds and their milieu is in the next clause, and both recieve distal marking. The patterns obtains with other sections in both stories.

Consistent use of proximal:distal marking allows an audience of Hopi speakers to segment narrative discourse into coherent sections that match narratives functions of an overall cultural pattern.

At the same time, there are means for structuring material within a section (subordination, local topicalization with -wa or -wat, and syntactic movement rules) AND at least one pervasive linguistic way of setting off an entire narrative discourse from all other genres. Nearly all the narrative clauses contain yaw (the quotative particle) and all quoted material is framed by yaw kita'thus said', which is the quotative plus a metapragmatic verb used only for reporting speech (cf. Kroskrity 1985:197, for a similar use of quotatives in the neighboring Arziona Tewa and Navajo). Investigation of these matters is deferred to later investigation.

In summary, Hopi narrative discourse has distinctive linguistic markers at the discourse, section and subsection levels, thus allowing a flat text (= no indication of prosodic cues) to be segmented into section, with major sectional breaks. Versification (Hymes 1981) using initial particles such as pay 'immediative' and noq 'contrastive' appears to be a likely way of analyzing Hopi discourse to its ultimate levels. It is a shame that little material is available to study intonational cues in Hopi narrative discourse along the lines suggested by Tedlock (1972, 1983), allowing for comparison of the syntactic and prosodic paramters (Kroskrity 1985). Further work at the subsection level (as opposed to the verse level) may proceed by studying indexes of topicality and the like (cf. Payne 1987, after Givón 1983 a and b).

APPENDIX ONE. Analysis of a Short Coyote Story (Malotki and Lomatuway'ma 1984:2-7).

1.	Beginning	Noq pep I' IISAW ki'yta. 'So THIS COYOTE was living there'
2.	Setting	Pay YANTSAKI yaw puma'ay. Noq yaw puma pay... 'They kept doing THIS WAY. So they...'
3.	Set Up	Paypi YANG oova I' TUVE'TSOTSKI a'ni'i... 'ALONG HERE on THIS MOUNTAIN TOP...'
4.	Journey	YAN yaw pam put ngemnat pu' yaw pangqaqw nima. 'THIS WAY he invited him and went home.'
5.	Realization	Son pi nu' kwaats qa tuwat nopnakyango," yaw pam YAN wuuwaqw... 'I should really feed my friend," he thought THIS WAY...

6. End — YAN yaw pam naap kwaatsiy niina.
'THIS:WAY he killed his own friend.'

Synopsis:

1. Coyote and Porcupine visited back and forth.

2. Coyote visits Porcupine, who serves him a delicious roast.

3. Porcupine tells Coyote that the roast is greasewood bark dripped with blood from his nostrils; he pricked his nostrils with one of his quills.

4. Coyote asks his friend to dinner at his place, and asks to borrow one of his quills.

5. Coyote tries the roast trick; he bleeds to death.

6. Porcupine finds Coyote and scolds him for being so gullible.

APPENDIX TWO. Analysis of a Long Coyote Story (Malotki and Lomatuway'ma 1985:105-117).

The synopsis is given after each section head.

1. Setting — THESE GAME ANIMALS left...THIS COYOTE was living there... pitied THESE HOPIS...
The game animals leave the Hopi area due to drought.

2. Scheme — he remembered that THESE CLOUDS lived at the Grand Canyon OVER:HERE...he would speak to the chief ABOUT THIS... THIS:WAY he was thinking...
Coyote sympathizes with the Hopis; he remembers one can make a prayer journey to the Grand Canyon to solicit moisture from the clouds who live there.

3. Proposal — now THIS VILLAGE:CHIEF always retired after everyone else...
He goes to the Oraibi village chief to offer to undertake the journey.

4. Empathizes — THESE GAME ANIMALS are too far away... "thanks, you are sympathetic and think of us THIS:WAY"...
The chief accepts the offer.

5. Plan — and when they heard THIS... THIS COYOTE awoke...
The chief summons priests to make prayer feathers.

6. Preparation and THIS COYOTE ate and then...
Coyote becomes involved with the ritual.

7. Task Done "we then will keep vigil over THIS OUR WORK"...
A prayer vigil ensues.

8. Journey THIS CHIEF then woke up THIS COYOTE...
Coyote sets out.

9. Journey THESE DOGS again (wanted) to chase him ...
The village dogs want to pursue Coyote, but his escort prevents this.

10. Backfire And Coyote, feeling THIS:WAY,...
Coyote travels until he comes to a water hole; there he pauses to drink and is lured to his death by a water maiden.

11. Resolution And THESE ORAIBI PRAYER-MAKERS were waiting...
The Oraibis wait for a month and then send a youth in search of Coyote. He finds him at the water hole, but departs when he encounters the water maiden.

12. Resolution and THESE CLOUDS were thick there... give you THESE PRODUCTS OF OUR LABOR ...
Youth arrives at Grand Canyon; makes prayers to clouds; he returns home.

13. Resolution IN:THIS:WAY they made it rain again...
The clouds go to Oraibi and rain.

14. End HERE it is humped.
The end.

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A Discourse Analysis of Japanese Invitations

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The standard invitation/request form in Japanese, given in (1) below, is viewed by many linguists and given in most Japanese textbooks as the primary invitation/request form for any social context.1

(1) Vroot + -(a)nai ka↗2
Vroot NEG,IPF Q
Won't you do V?

However, the standard form was used in only a few of the invitations found in the 25 hours of actual telephone conversations collected in Japan for this study. What goes on among friends and acquaintances in this context is a careful process of negotiation regulated by 1) lexical contextualization cues given by the person making the invitation, 2) the prior text or shared experience of the individuals involved, and 3) responses from the invitee; these included silence, minimal listener response, acknowledgement, positive/negative assessment of the information, and requests for further information.

My approach is within the framework of conversational analysis, broadly speaking.3 In this paper I concentrate on four invitations to a tea ceremony by a woman I will call Nakano-san. On separate occasions she called and invited two close friends, her aunt and another friend whom she had known for less time. Transcriptions of these invitations are given in Conversations I through IV, respectively, in the Appendix.4 Given the absence of the standard form in many of the invitations I studied, I address the questions: How does the invitee know that they are being invited? Why should the person making an invitation use more abstract forms instead of the form that everyone claims is the standard?

In both Conversations I and II, between close friends, Nakano-san used the extended predicate construction instead of the standard form, that is, predicate + no (a nominalizer) in line 1 of Conversation I and predicate + ñ da in line 3 of Conversation II. Jorden and Noda (in press) claim that Japanese use this construction to relate the predicate before no or ñ da to something in the real world which is known by the speaker and known or assumed to be known by the addressee. This pattern is often used as an explanation. I will translate the no and ñ da forms, which nominalize the preceding predicate, as "it's that".

Thus, in Conversation I Nakano-san began by saying

(2)N-koñdo neʕ otyakai ḡa aru no yo. --uti no syusai no
this time you know?, it's that there's a tea ceremony!
--siti-ḡatu no mik-ka, nitiyoobi.
--one sponsored by my group, July 3, Sunday.

Her friend Shiba-san immediately refused the invitation. In Conversation II, Nakano-san began with an utterance which anticipated a negative response from Ichikawa-san followed by a similar extended predicate expression.

(3)N-tabun doo ka na to omou ñ da kedo,
it's that I think you probably won't be interested but,
mata otyakai ḡa aru ñ da kedo,
it's that there's a tea ceremony again but,

Ichikawa-san asked when it would be and refused indirectly by explaining that she had a tennis match on the third and fifth.

In both of these conversations Nakano-san referred back to previous invitations. In Conversation I, Nakano-san and Shiba-san shared many prior texts of doing things together. The use of koñdo, "this time", in (2), suggested that this was the next invitation in the series of invitations they had shared up to the present. In Conversation II, Nakano-san used mata, "again" in (3) to refer back to previous tea ceremony invitations which Ichikawa-san had refused after prefacing her event presentation with a statement which anticipated another refusal. Thus, Nakano-san's lexical contextualization cues along with the prior invitation texts which these friends shared influenced Nakano-san's friends in their interpretations of her discourse.

In Conversation III, Nakano-san invited her aunt, again beginning with a statement of the event and date using the extended predicate construction as given in (4) below. However, her utterance did not contain any lexical contextualization cues as in the previous two conversations.

(4)N-Siti-ḡatu no mik-ka ni neˀ otyakai ḡa aru ñ da kedo,
On July 3, you know?, it's that there is a tea ceremony but,

The aunt responded with a question, "July 3?", after which Nakano-san continued with the standard invitation/request form.

(5)N-Ikanai?
Won't (you) go?

The aunt said "What? A tea ceremony? Where?" and after being told where the ceremony would take place commented that it was really far away. At this point Nakano-san sensed some reluctance on her aunt's part and suggested an out.

(6)N-Zikañ nai ka.
(You) don't have the time?

The aunt responded that she hadn't cleaned things up yet. This ended the invitation. Nakano-san mentioned to me later that the aunt had refused.

Conversation IV was with Kato-san, a friend Nakano-san had not known as long as Shiba-san and Ichikawa-san. After greetings and getting Kato-san's attention Nakano-san began as follows.

(7)N-Zitu wa anoo otyakai ga koñdo no siti-gatu::: no
the fact is um it's that there's a tea ceremony
mik-ka ka na, nitiyoobi, aru no neʕ
on this coming Sunday, July 3, you know?

The subsequent conversation consisted of an event presentation which was much longer than that of Conversations I through III; Nakano-san gave the date, day, sponsor, place and cost, in that order using the extended predicate construction but no contextualization cues until much later in the conversation.

In Conversations I through IV, the presentation of events could have been interpreted in a variety of ways. Nakano-san was in the habit of visiting her aunt on the way to the beauty parlor near her aunt's house, where she often went to get help putting on her kimono. Since tea ceremonies are events in Japan which often require kimono, the opening event presentation in Conversation III could have been leading to a conversation about dropping by on July 3 on the way to the beauty parlor. Nakano-san rarely invited her aunt out to do things, although she frequently went to visit her. Conversations I and II also left other options open. For example, the presentation of events in (2) and (3) could have lead to a conversation about borrowing something for that day. However, the invitation interpretation was highly salient because of prior shared invitations in Nakano-san and her friends' relationships and the contextualizations cues. Conversation IV will be discussed in more detail below.

It is interesting that in Conversations I, II and IV Nakano-san never made an explicit invitation; to borrow Brown and Levinson's (1978) terminology, the invitation was "off record". Since Nakano-san used the extended predicate in her presentation of the events instead of the standard form, she could not be held to have committed herself to the intent of an invitation, yet in each of these cases Nakano-san told me that she had intended to invite these four people. In Conversations I and II, although the invitation was off record, it was immediately recognized as an invitation. In Conversation IV, the issue of whether or not it was an invitation was negotiated and was finally resolved to be an invitation. It is also common in Japanese to abort an invitation at the event presentation stage. In these cases, the potential invitee may not even notice that an invitation had been in the making. The invitation-- and even what an invitation is-- is subject to negotiation in the conversation.

Brown and Levinson's (1978) and Brown's (1980) work on politeness helps to illuminate why the standard form would not be used in every social context. They propose a model of politeness based on the view that people have positive and negative face wants. Positive face wants refer to the "desires to be liked,

admired, ratified and related to positively", while negative face wants refer to the desires to have one's privacy respected and to not be imposed on (Brown 1980: 114-5). They give three factors which determine the level of politeness used in a given situation: 1- the status of the individuals involved, 2- the amount of social distance between the individuals involved, and 3- the nature of the speech act, in particular, the degree of risk of threatening the other's face by performing an act.

In invitations there is a risk to the invitee's negative face, because the invitation might put the invitee in a position where they have to refuse. This would in turn threaten the person making the invitation's positive face because it would threaten their desire to be liked, a desire which is partially fulfilled by doing things together. A pilot comparison of Japanese and English conversations suggested that the risk involved in putting the invitee into a position where they might have to refuse, i.e. the threat to the invitee's negative face, was the primary concern in the Japanese case. On the other hand, the risk of threatening the invitee's positive face by not involving the invitee, seemed to be of more concern in the American case. In other words, the Japanese used strategies which avoided putting the invitee into a position where they would refuse, while Americans used strategies which put the invitee into a position where they would accept. The Japanese tended to play down the positive aspects of the invitation and in fact avoided making the invitation explicit until there was a clear indication that the invitee was interested in the event. In cases where the invitation was recognized and the invitee seemed reluctant, the person making the invitation would offer excuses or ways out for the invitee so that they would not have to refuse. This was the case in Conversation III, line 5 where Nakano-san offered her aunt a way out by suggesting that her aunt did not have the time. On the other hand, Americans tended to play up the positive aspects of the event, in a sense selling the invitation and trying to win the other person over if they showed reluctance. These are preliminary conclusions, however, and need to be substantiated by further comparative data analysis. Analysis of the Japanese data showed that the situation is more complex and I expect that the same would be true in English. Japanese participants were very sensitive to signals during the conversation and the negotiation was directly correlated with the responses of the invitee.

For example, I will now analyze the negotiation in Conversation IV, in particular pointing out how Nakano-san's presentation was influenced by Kato-san's responses. Following Schegloff (1980,1981), I view the discourse as an interactional achievement which develops over time. I also adopt Sandra Thompson's (personal communication) view of conversation as a dance, in which what each of the participants does influences the other. The dancers are an inseparable unit. Following Erickson (1981) and Erickson and Shultz (1982), I indicated the tempo of this

conversation by marking off the beats and numbering the measures. The numbers mark downbeats and the upbeats are indicated by a ".". I observed a regular tempo throughout the conversations used in this study. Although there were parts where the tempo speeded up or slowed down briefly, overall the beats in Conversation IV occurred at a metronome marking of approximately 112 beats per minute.5 Thus, the dancers created and kept time with this tempo. Finally, I used Brown and Levinson (1978) and Brown's (1980) theory of politeness and Erickson and Shultz' (1982) notion of arhythmia to explain the interaction as it developed in the discourse. Arhythmia is realized as a pause, a missed beat or beats, or a change in tempo in the discourse. Erickson and Shultz (1982) found that arhythmia coincided with uncomfortable moments in the discourse and often lead to hyperexplanation or clarification. They have also demonstrated that speakers create Listener Response Relevance Moments (LRRM). These are moments in which the listener is expected to respond. A pause at a LRRM was an example of arhythmia which correlated with uncomfortable moments or misunderstanding. I indicated unfilled LRRMs in the Appendix by dashed lines with asterisks on the missed downbeats (see measures 31-32).

In Conversation VI, Nakano-san and Kato-san exchanged greetings in measures 1 through 4. The tempo quickened in measure 7 and Nakano-san began her presentation of the event using the extended predicate construction without positive or negative evaluation in measures 9 through 27. In measures 7 and 14 she ended her utterances with the sentence final particle ne^{S}, "you know?". This created a LRRM and each time Kato-san responded with a minimal listener response, Ñ, "Uh huh". In fact, Kato-san responded frequently, not only after the completion of Nakano-san's clauses and sentences but also mid-clause on an upbeat as in measure 13. At measure 27, Kato-san responded with a minimal verification question, Gokokuzi, "Gokoku Temple?", followed by Hee? in measure 28, a response which expressed surprise or interest in the topic under discussion, roughly equivalent to "wow" in English. This suggested that Kato-san might be more inclined to accept the invitation than not.

The tempo speeded up in measure 29 and signalled a change in Nakano-san's orientation towards Kato-san's attitude about the event. At this point, Nakano-san mentioned what she considered to be one of the impressive points about the tea ceremony, the fact that there would be 8 tearooms. According to Nakano-san the more tearooms the better because one can drink more tea and eat more tea cakes and there is less time to wait. However, despite the favorable aspects of this information, Nakano-san used the same extended predicate form and final sentence particle ne^{S}, "you know" that she had used previously, i.e., there was no explicit reference to the fact that there being 8 tearooms was a major selling point. Arythmia began in measure 31. Although Nakano-san's sentence which ended with ne^{S} created a LRRM on the downbeat of measure 32, a full measure and a half went by without

Kato-san giving even a minimal listener response. After the pause during the LRRM in measure 32, Nakano-san used a negative politeness strategy to avoid imposing on Kato-san. Nakano-san told me that this kind of tea ceremony usually cost ¥5000 or ¥8000, therefore ¥3000 was a bargain. Although the cost of the tea ceremony, ¥3000, was very reasonable, she apologized for the cost being expensive.

(8)N-Soide tyotto, yoñ-señ-eñ zya nakute, sañ-zeñ-eñ de
then, just, it's ¥4000, no it's ¥3000 and (so)
takai ñ da kedo,
it's that it's expensive but..."

The expression, tyotto, "a little bit", in her apology explicitly played down the importance of her utterance.6 The fact that Nakano-san misquoted the price may also reflect her discomfort from the previous silence. It is interesting that she misquoted the cost as being higher than it actually was. This might have been a strategy to show that the cost was lower than something although she explicitly stated that it was expensive. If Nakano-san had played up the reasonableness of the cost at this point it would have made it more difficult for Kato-san to refuse. Pushing the information at this point would have been viewed as an imposition, rather than a positive attempt to create involvement.

Measure 36 also went by in silence. Nakano-san hesitated for a full measure in measure 37. Then Nakano-san and Kato-san overlapped speech on the downbeat of measure 38. Nakano-san said Mosi, "if", maybe about to say, "if it's alright with you, how would it be or won't you come?" and at the same time Kato-san asked, Iku no?, "Is it that going will take place?". The content of these utterances suggested that Nakano-san and Kato-san had been concerned with different issues. Since Kato-san had not been explicitly invited, it was difficult for her to accept or refuse. She would have been in an awkward situation if she had said that she was interested in going only to find out that in fact this was not an invitation but merely a discussion of events. In doing this she would have imposed on Nakano-san's negative face by implying that they were closer friends than they were. She initiated a repair sequence in measure 38 and cleverly tried to get Nakano-san to commit herself to whether or not this was an invitation, without seeming too forward.

(9) Iku no?
go IPF NOM
Is it that going will take place?
Is it that you're/we're going?

Kato-san's question contained no explicit subject reference. It literally means "Is it that going will take place?" and could be interpreted as "Is it that you're (Nakano-san) going?" or "Is it that we're going?". Following the overlap, there was a series of

measures with intermittent silence where the beat was less clear and their utterances were less synchronized. Nakano-san missed the downbeat of measure 39 with her utterance of surprise uñ?, "what?" and Kato-san's repetition of her question Iku no?, also did not coincide with the beat. Nakano-san gave an affirmative answer in measure 41 but still did not commit herself to the invitation. Nakano-san was worried that Kato-san might refuse. Although Kato-san had expressed her positive interest in measure 28, she had not responded in measures 32 or 36. Kato-san gave a positive assessment of the situation in measures 41 to 42, A hoñtoo-ii na., "Oh really. That's nice". They laughed for three beats and were silent for 2 measures. Kato-san's explicit positive assessment after her side of the confusion was resolved indicated to Nakano-san that the risk of putting Kato-san into a position where she would refuse was low. In addition, Kato-san's repair strategy suggested that her lack of response in measure 32 and 36 was due to a misunderstanding rather than a lack of interest in the event. Thus, in measure 46 Nakano-san made her invitation more explicit with her question Doo? Nañka., "How would it be? somehow." After more negotiation Kato-san answered Nakano-san's invitation with a tentative yes, Itte miyoo ka na., "I guess I might go" in measure 57.

Thus, Nakano-san and Kato-san were talking at different levels of abstraction. This lead to arhythmia and the conversation did not make any headway. Nakano-san was operating with the invitation as her premise. She assumed that this was an invitation and was concerned with whether or not Kato-san would be interested in going. She used a negative politeness strategy in order to avoid putting Kato-san into a position where she would have to refuse. Kato-san, on the other hand, did not seem to have accepted the same premise. She was wondering whether or not Nakano-san was inviting her to go in the first place. Kato-san's lack of response reflected her confusion about the steps of the dance, about what Nakano-san was getting at, rather than a lack of interest in accepting the invitation. At measure 38, Nakano-san and Kato-san stepped on one another's toes and the need arose to stop the dance and to discuss the steps. Their overlapped utterances in measure 38 expressed their respective views of the situation. Nakano-san had proceeded with her invitation in mind while Kato-san was asking about the steps of the dance.

Language interaction is often likened to a game. Bateson describes "play" as follows.

> These actions, in which we now engage, do not denote what would be denoted by those actions which these actions denote. (1972: 180)

He gives a parallel example of monkeys playing.

> The playful nip denotes the bite, but it does not denote what would be denoted by the bite. (1972:180)

Nakano-san's invitation was off-record. The words Nakano-san used in presenting the tea ceremony event did not denote those actions which they would denote, i.e., a discussion of events,

but rather served as a metacommunicative abstraction for an invitation. Bateson has also observed that the discrimination between map and territory can break down. There is often mediation between levels of nipping and biting, between play and the real thing. In measure 38, the higher level of invitation degenerated into a discussion of the steps of the dance. Nakano-san and Kato-san negotiated their respective views of the situation mediating back and forth between a discussion of events and the invitation.

The fact that many linguists and the Japanese themselves claim that Vroot + -(a)nai ka✓ is the standard invitation/request form suggests that using this form would unmistakenly indicate an invitation/request. This would involve a lower level of abstraction since the words would denote the actions they should denote. However, there is in fact some level of abstraction involved even in the standard form as can be seen in example (10) below.

(10) Otya mesiaĝari-mas-eñ ka✓
Japanese tea drink HON,POL-DIST-NEG,IPF Q
a. "Won't (you) drink (some) Japanese tea?"
b. "Don't (you) drink Japanese tea?"

As indicated by the two possible translational equivalents this question could be either an invitation to drink tea, or a question as to whether the addressee drinks tea. It is not uncommon to be served tea in Japan when one is waiting to see someone at an office, for example. The question in (10) might be uttered before bringing the tea out or, as is often the case, the tea might be brought out without asking anything first. Knowing this custom and the fact that almost all Japanese drink Japanese tea, most Japanese would interpret (10) as being an invitation to have tea. However, a westerner who is not used to drinking tea while waiting in an office and who might in fact justifiably prefer coffee, might interpret this as an inquiry about whether or not they drink Japanese tea. Therefore, the standard invitation/request form can involve some level of abstraction. However, the fact that Japanese do not mention the use of the extended predicate construction as a standard invitation/request form suggests that the use of the extended predicate in Conversations I, II and IV represents a higher level of abstraction. One might raise the question of why people speak at levels of abstraction where actions or words do not denote what would be denoted by those words which these words would denote. Why use more abstract expressions instead of the form which everyone claims is the standard?

The higher levels of abstraction used in the invitation in Conversation IV were necessary because this invitation involved the most risk. Nakano-san did not invite Kato-san to do things very often, and although they were friends, they were not that close yet. There was also risk involved in Conversations I and II, but the level of risk was lower because Nakano-san and Shiba-

san and Ichikawa-san shared many prior invitation texts and their friendships were close. An occasional refusal was not injurious to their relationships. Conversation III between Nakano-san and her aunt was a situation where Nakano-san was not in the habit of making invitations, but here the risk of the aunt refusing was not as high as in Conversation IV. Nakano-san's relationship with her aunt was very stable, and she and her aunt, as relatives, were in-group by definition. It is interesting, however, that Nakano-san did offer her aunt an out by suggesting she didn't have the time when the aunt seemed reluctant. Finally, in the example in (10) where the standard invitation/request form is used to offer tea, again the risk involved in refusing tea is very low. In Japan, if the question is asked at all it is simply a formality. Tea may be served even if the answer is negative, the negative answer being interpreted as an instance where the addressee is showing restraint though they in fact really want some tea.

Higher levels of abstraction are used when speaking off record and reduce the risk involved in a face threatening act. Whether or not more abstract forms are used depends on the amount of risk involved. An invitation to a tea ceremony presents more risk than an invitation to drink tea in an office, where it is alright to accept and not drink the tea. Also, an invitation to a tea ceremony can present more or less risk depending on the relationship of the participants. Thus, the consequences were less risky with an aunt than with close friends who often did things together and most risky with a friend who was less close and with whom Nakano-san associated less often. Higher levels of abstraction lower the risk involved. It is interesting that Shiba-san and Ichikawa-san were quick to respond to Nakano-san's invitation in Conversations I and II, respectively. Their ease of interpretation suggested that the extended predicate form had become routinized and thus had lost some of its abstractness. In effect, it appeared to have lost some of its off-record quality. Quick perception of Nakano-san's invitation was also a way of affirming the closeness of their relationship.

The fact that the Japanese Vroot + -(a)nai kaV form and English "Would you like to do X with me?" forms are recognized as standard invitation/request forms, is a reflection of the global concerns involved in making an invitation in the respective societies. Hopper has observed that the grammaticalizations of tense-aspect forms are typical extensions of the aspectual functions central to the discourse as a universal phenemonon. Form must have some meaning to enable communication, but "the more abstract or 'grammatical' a morpheme is the more it draws upon context for its interpretation" (1982: 4). The Japanese culture is other-oriented and as I have suggested, in making an invitation the concern is to avoid threatening the invitee's negative face by putting them into a position where they have to refuse. The standard invitation/request form can be seen as an extension of the way an invitation functions in the culture. In

Japanese, yes-no questions are answered based on whether the question is true or not, i.e., one answers, "yes, it is true" or "no, it isn't true" as illustrated in (11) below. Thus, a negative question allows one to answer in the negative but still be affirmative.

(11)	Ikanai ?	Ee, ikanai.
	go NEG Q	yes go NEG
	Will you not go?	Yes, I will not go.

Similarly, offering a way out when the invitee seems reluctant with a negative question, as Nakano-san did in Conversation III, line 5, also allows the invitee to refuse and still be affirmative. For example, in response to Nakano-san's suggestion to her aunt of a possible way out, Zikaⁿ nai ka., "You don't have any time?", the aunt could have refused in the affirmative by saying Ee, tyotto, "Yes, it's a bit". The fact that the question is worded in the negative also reflects the tendency for Japanese to present things in an apologetic negative light and downplay favorable impressive information. English, "Do you want to go...?" assumes that the other would like to go. It reflects the tendency to present the event in a positive light. Playing up positive impressive information is a way of involving the invitee in English invitations. However, these statements serve as no more than a generalization and do not explain how one would actually proceed in a particular context in either society. The use of standard forms reflects a static view of language. In actuality, the meanings are negotiated within each context and emerge from the particularity of each situation. Because of the dynamic context-sensitivity involved in invitations, it is not surprising that the standard Vroot + -(a)nai ka/form occurs infrequently in invitations in actual use.

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1 See Jorden 1963, Shibatani 1972, Kageyama and Ikuhiro 1975-6, Miyagawa 1982, Japanese Language Research Group 1983, Jorden and Noda in press.

2 Abbreviations in the examples stand for the following: V=verbal, NEG=negative, IPF=imperfective, Q=question, HON=honorific, POL=polite, DIST=distal

3 The methodology used in this analysis follows that of Schegloff (1980,1981), Sacks, Schegloff and Jefferson (1974), Erickson (1981), Erickson and Shultz (1982), Brown and Levinson (1978) and Brown (1980).

4 The romanization used in this paper follows that of Jorden (in press) with the exception that vowel lengthening beyond that typically given in the dictionary is given by ":".

The conversations were transcribed from left to right in paired lines. Each line contains utterances by the respective participants in the conversation. Earlier utterances appear further to the left on these paired lines. The paired lines should be read together to get a sense of how the interaction progressed in the conversation. Overlap is indicated by brackets around the overlapped speech as in the following example,

N- [Mosi]
K- I[ku no?]

Breath marks are indicated by "'". "~~>" indicates a speed up in tempo.

5 I used a complicated procedure to determine the tempo of this conversation. First, I had someone watch me as I conducted this conversation as an orchestra conductor would conduct an orchestra and count the number of beats in a minute. This gave me a general idea of the appropriate metronome marking. Then, I set up two tape recorders and played the conversation on one tape recorder while recording onto a second, at the same time tapping the beats with a pencil. Afterwards I listened to the second tape recorder at low speed to get a more precise idea of where the beats coincided with the speech.

6 Matsumoto (1985) claims that tyotto "conveys the unimportance of the content of the assertion ... and allows the addressee to pay less attention to the statement". Jorden and Noda (in press) have also referred to tyotto as a belittler because it reduces the importance of the utterance.

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APPENDIX

CONVERSATION I: (N=Nakano-sañ, female 27 --> S=Shiba-sañ, female 25)

1.N-Sore kara neˀ Anoo KOÑDO neˀ otyakai ḡa aru NO yo.
Then, you know? Um. THIS TIME, you know? it's that there's a tea ceremony!
2.S- Ñ.
Uh huh.

3.N-uti no syusai no. Siti-ḡatu no mik-ka, nitiyoobi.
sponsered by my group.July 3rd, Sunday.
4.S- Ñ. A. Watasi dame da to omou wa-
Uh huh. Oh. I think I can't!

5.N-
6.S-hakkiri itte:
to be frank

CONVERSATION II: (N=Nakano-sañ, female 27 --> I=Ichikawa-sañ, female 28)

1.N-Ano neˀ anoo, tabuñ doo ka naa to omou Ñ da kedo,
Um, you know? Um it's that I think you probably won't be interested but,
2.I-

3.N-MATA otyakai ḡa aru Ñ da kedo, Eeto, siti-ḡatu no mik-ka.
it's that there's a tea ceremony AGAIN but, Um, July 3rd.
4.I- Itu?
When?

5.N-
6.I-siti-ḡatu no mik-ka, A, watasi mik-ka to too-ka tenisu no siai,
July 3rd. Oh. I the 3rd and the 10th are tennis matches,

7.N-
8.I-nitiyoobi desyoo.
it's Sunday isn't it.

CONVERSATION III: (N=Nakano-sañ, female 27 --> A=Nakano-sañ's aunt, female 42)

1.N-Siti-ḡatu no mik-ka ni neˀ Otyakai ḡa aru Ñ da kedo,
On July 3rd, you know?, It's that there's a tea ceremony but
2.A- Siti-gatu mik-ka?
July 3rd?

3.N-IKANAI? Ñ. Gokokuzi.
Won't you go? Uh huh. Gokoku Temple.
4.A- Uñ? Otyakai? Doko de? {Laugh}
What? A tea ceremony? Where?

5.N- Aa. Zikañ nai ka.
Oh. You don't have the time?
6.A-Moo hoñto tooku natyatta moñ nee. Ñ.Ñ.
Oh it's really far away, isn't it. Uh. Uh.

7.N- Ñ.Ñ.
Uh.Uh.
8.A-Nitiyoobi. Doo ka naa. Mada yoosuru ni katatuite nai NO yo.
Sunday. I wonder. In short, it's that I haven't cleaned up yet!

CONVERSATION IV: (N=Nakano-saN, female 27 --> Kato-saN, female 31)

	1	2	3	4
N-	Mosimosi.		Koñbañ wa.	
	Hello.		Good evening.	
K-		Hai.		Koñ bañ wa.
		Yes.		Good evening.

	5	6	7 ~~~→	8
N-	{Laugh}		Ano ne⸮	
			Um, you know?	
K-		{Laugh}		N̄.
				Uh huh.

	9	10	11	12
N-	Zitu wa anoo	otyakai ga koñdo no siti-gatu:::		no mik-ka ka na niti-
	The fact is, um, it's that there's a tea ceremony on this coming Sunday			
K-				

	13	14	15	16
N-	yoobi	aru NO ne⸮		Soide sa
	July 3rd,	you know?		And, you know,
K-	N̄.		N̄.	
	Uh huh.		Uh huh.	

	17	18	19	20
N-	Anoo koñdo	watasi no hoo no	Gaimusyoo no	hoo no señsee no
	Um this time	my	the Foreign Ministry's	teacher's
K-				

	21	22	23	24
N-	Anoo:::	Gooyuukai to yuu	kai ga aru N̄ da kedo	sono betu no sensee
	Ummmm	It's that there's a club called the Friendship Club		but this other
K-				

	25	26	27	28
N-	ga	Gokokuzi de yaru wake.	N̄.	
	teacher it 's that	she'll do it at Gokoku Temple.	Uh huh.	
K-			Gokokuzi.	Hee?
			Gokoku Temple?	Wow.

	29	~~~→ 30	31	32
N-	N̄.	Asoko has-seki aru NO ne⸮	----------**------	Soide tyotto
	Uh huh.	It's that there will be 8 tearooms, you know?		Then just
K-			----------**------	

	33	34	35	36
N-	yoñ-señ-eñ zya	nakute saN-zeñ-eñ de	takai N̄ da kedo-	**----------
	it's Y4000, no Y3000	and (so) it's that it's expensive	but	
K-				-**----------

37 . 38 . 39 . 40 .
N-Anoo::::: [Mosi]----------**---Uñ?
Uuuuuuuuuu [If] Huh?
K- [Iku NO?]----------**--- Iku NO?
Is it that going will take place? Is it that going will take place?
Is it that you're/we're going? Is it that you're/we're going?

---

41 . 42 . 43 . 44 .
N-Ññ. (Laugh) ----------
Uh huh.
K- A hoñtoo-ii na. (Laugh) (Laugh)----------
Oh really-that's nice.

---

45 . 46 . 47 . 48 .
N-**----------Doo? nañka
How would it be? somehow
K-**----------
Itu made ni kimenakya ike-
When is it that I have to

---

49 . 50 . 51 . 52 .
N- ----------**---Itu made tte narubeku nara hayai hoo ga ii Ñ da kedo
By when? if possible it's that the earlier the better but
K-nai NO?----------**---
decide by?

---

53 . 54 . 55 . 56 .
N-**---------- Ñ.---------**----------**----------
Uh huh.
K-**----------A soo. ---------**----------**----------
Oh really.

---

57 .
N-
K-Itte miyoo ka na.
I guess I might go.

The Predicate Argument Structure of Bei*

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1. Chinese bei sentences

In Chinese there is a sentence pattern in a sequence of NP_1 + bei + NP_2 + V, which often paraphrases sentences with the same verb and NPs but in a sequence of NP_2 + V + NP_1.

(1) a. xuesheng jiao le laoshi de toufa.
students cut asp teacher poss. hair
'The students cut the teacher's hair.'

b. laoshi de toufa bei xuesheng jiao le.
teacher poss. hair bei students cut asp
'The teacher's hair was cut by the students.'

(2) a. Laoban jiang le Lisi de gongzi.
boss cut-down asp Lisi poss. salary
'The boss cut down Lisi's salary.'

b. Lisi de gongzi bei Laoban jiang le.
Lisi poss salary bei boss cut-down asp
'Lisi's salary was cut down by the boss.'

As shown in their translations, the above examples seem to parallel their English counterparts-- the pairs of active v.s. passive sentences. Linguists have tried to account for the relation between sentences in each pair by proposing a transformation rule (Chomsky(1957)), NP-move (Chomsky(1981&1982)), or a lexical rule (Bresnan(1982)).

In spite of the difference among these approaches to passives, they have something in common: a verb has to be transitive to be passivizable. This hallmark of passivization makes us consider *bei* sentences as anything but passives, since the main verbs in *bei* sentences are not necessarily transitive, for example

(3) xianglian bei ta pao diao le san ke zhuzi
necklace bei she/her run drop asp three class. bead
'The necklace dropped three beads because of her running.'

(4) wo bei ta ku de hen shangxin
I bei he/him cry comp very sad
'I was saddened by his crying.'

(5) Liang zhi jiao bei zou chu le pao.
two class. foot bei walk appear asp blister
'Two feet got blisters because of walking.'

(6)tongwu bei ta kesou de mei fa shuijiao.
roomate bei he/him cough comp no way sleep
'His$_i$ roommate could not sleep because of his$_i$ coughing.'

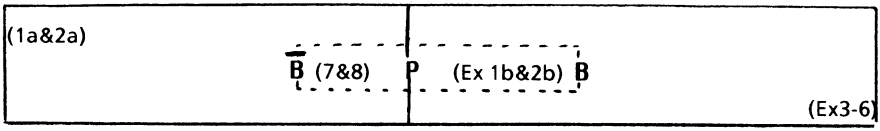
Moreover, the passive meaning can be conveyed in sentences without *bei* phrases, for examples

(7) laoshide toufa jiao le .
teacher's hair cut asp
'The teacher's hair was cut.

(8) Lisi de gongzi jiang le.
Lisi's salary cut-down asp
'Lisi's salary was cut down.

The following figure may serve as an illustration of th relation among P(assive), B(ei), and $\overline{B}$(without *bei* phrases) sentences

(9)



2. The problems with considering bei as the matrix verb

Ma(1985) considers *bei* sentences not analogous to English passives, the latter but not the former conforming to Bresnan's(1982) generalization of the nature of passivization (10).

(10)Passivization (SUBJ) --->(OBL)/Ø (OBJ) --->(SUBJ)

Ma's arguments are 1) NP_2 (in NP_1 bei NP_2 V) is not oblique;(The reason is that if *bei* were a preposition, a *bei* sentence without an overt NP_2 such as (11)a&b would be ruled out, since objects of PP's are never null elsewhere.

(11) a. laoshi de toufa bei e jiao le.
teacher poss. hair bei e cut asp.
'The teacher's hair was cut.'

b. Lisi de gongzi bei e jiang le.
Lisi poss salary bei e cut-down asp
'Lisi's salary was cut down .'

Yet (11)a-b are perfect. Therefore, *bei* must not be a preposition and if *bei* is not a preposition, NP2 cannot be oblique, since all other obliques are always accompanied by a preposition or postposition.)[1] 2) NP2 has properties of SUBJ in Chinese: it can control XADJ's as in (12)b and bind a reflexive ziji 'self' as in (13)b, while no other non-subject NPs can [2]. The examples she gives are

(12) a. Laotan guang-zhe-jiao bei Malizi ti-si le.(Ma(1985) (13)a)
Laotan barefoot bei Malizi kick-die asp
'Laotan, barefoot, was kicked to death by Malizi.'

b. Laotan bei Malizi guang-zhe-jiao ti-si le. (Ma(1985) (13)b)
Laotan bei Malizi barefoot kick-die asp
'Laotan was kicked to death by Malizi who was barefoot.'

(13) a. Laotan$_i$ gei Malizi$_j$ ziji$_{i/*j}$ de xiangpian.(Ma(1985) (18))
Laotan give Malizi self poss picture
'Laotan gave Malizi pictures of her(= Laotan's).'

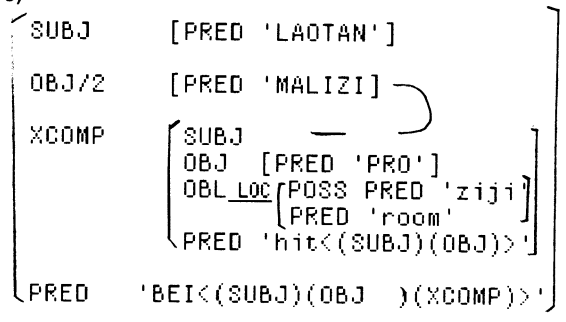
b. Laotan$_i$ bei Malizi$_j$ zai ziji$_{i/j}$ de fangjianli da le.(Ma(1985) (22))
Laotani bei Malizij loc. self poss room beat asp
'Laotani was beaten by Malizij in her i/j room.'

Ma(1985) attributes these properties of NP_2 to its control over an empty pronominal subject of the open complement subcategorized by *bei*. Based on these characteristics of NP_2, she proposes that Chinese *bei* has the lexical form like this

(14) bei V (↑ PRED) = 'bei<(↑ SUBJ)(↑ OBJ)(↑ XCOMP)>'
(↑ XCOMP SUBJ) = (↑ OBJ)

Thus the f-structures of (13)b is (15).

(15)



The cooccurrence of *bei* with intransitive verbs in sentences like (4-6) supports identifying *bei* as a verb instead of an oblique marker like the English *by* or a passive morpheme like the English *-en*.

However, even with this justification of identifying *bei* as a verb, it is quite dubious that *bei* has this lexical form, because *bei* does not parallel other verbs with the same argument structrue as (14): while all sentences whose main verbs have the argument structure like (14), can be rearranged in certain ways, *bei* sentences cannot. The following three rearranging processes obligatorily or optionally apply to sentences with the argument structrue 'V<(↑SUBJ)(↑OBJ)(↑XCOMP)>': 1)the objects can be topicalized by preceding their dominating S's as in (16)b; 2)the objects can be 'prefixed' by *ba* and preposed between the SUBJ and the verb, as in (16)c; 3) the objects with a universal quantifier but in the form of a wh-word must be preposed to get the reading of a universal quantifier and, meanwhile, the verb should be preceded by *dou* 'all', as in (17)b&c. Take the verb *rang* 'let' for example, it has the lexical form:rang 'let<(↑SUBJ)(↑OBJ)(↑XCOMP)>' exactly the same as (14). Sentences with *rang* as their main verb can undergo all of the three rearranging processes mentioned above.

(16) a. ta rang xiaohair jin wu.
he let child enter house
'He let children enter his house.'

b. xiaohair, ta rang jin wu.
child he let enter house
'Children,he let them enter his house.'

c. ta ba-xiaohair rang jin wu.
he ba-child let enter house
'He let children enter his house.'

(17) a.ta rang meigeren jin wu.
he let everybody enter house
'He let everybody enter his house.'

b.ta shui dou rang jin wu.(c.f.b')
he WHO all let enter house
'He let everybody enter his house.'

b'.ta dou rang shui jin wu.
he all let who enter house
'Who did he let enter his room?'

c. shui, ta dou rang jin wu.
WHO he all let enter house
'He let everybody enter his house.'

If *bei* had the same argument structure as *rang* 'let' does, all these changes that the object of 'let' underwent would be applicable to 'the object of *bei*' without causing any ungrammaticality, which is unfortunately not the case.

(18) a. laoshi de toufa bei xueshengmen jiao le
teacher poss. hair bei students cut asp
'The teacher's hair was cut by the students.'

b. *xueshengmen, laoshi de toufa bei jiao le.
students teacher poss. hair bei cut asp.(cf.(16)b.)

c. *laoshi de toufa ba-xueshengmen bei jiao le
teacher poss. hair ba-students bei cut asp (cf.(16)c.)

d. *laoshi de toufa shui dou bei jiao le
teacher poss. hair who all bei cut asp (cf.(17)b.)

e. *shui laoshi de toufa dou bei jiao le.
who teacher poss. hair all bei cut asp.(cf.(17)c.)

Notice that none of the changes that the object of *rang* may or must undergo is applicable to 'the object of *bei*'. This suggests that *bei* does not parallel *rang* in their lexical forms. According to (14), examples in (18) would have parallel responses to the rearranging processes with those for (16)&(17), which is not what we have found.

Another counterargument against the lexical form of *bei* (14) can be found in sentences where *bei* interacts with resultative clauses

(19) wo {a.ting/b.bei} ta ku de hen shangxin
I {a.hear/ b.bei} he/him cry comp very sad
a. 'I heard him crying sadly.' b. 'I was saddened by his crying.'

(20) xuesheng {a.kan/ b.bei} laoshi jiang de keshui le.
student {a.see/b.bei} teacher lecture comp sleepy asp
a. 'The students saw the teacher sleepily lecturing.'
b. 'The students were sleepy because of the teacher's lecturing.'

Notice that in a's the objects control 'sad' and 'sleepy', but in b's the subjects do instead, which would be a mystery if *bei* had the same lexical form as verbs like 'hear' or 'see' do.

3. Modified predicate argument structure of bei and the problem raised

The contrast between (16)&(17) and (18) in grammaticality seems to suggest that there is no object argument for *bei*. A modified argument structure of *bei* is

(21) bei V 'bei<(↑SUBJ)(↑COMP)>'.

which retains the non-passive status of *bei* sentences, but tries to explain the contrast in grammaticality between (16)&(17) and (18) by the difference of depth between the two NPs : the NP following *rang* is rearrangeable because, as the subcategorized for object of the matrix verb *rang*, its move to the topic position crosses only one bounding node S, while as the subject of the complement sentence, the NP following *bei* has to cross two S nodes to be in the topic position, given that there are certain constrainsts on how many bounding nodes can be crossed. However, (21) has every other problem as (14) does: 1) *Bei* sentences do not parallel other sentences whose main verbs have the same lexical form (21): the whole proposition in all those sentences can be topicalized, but not in *bei* sentences. For example,

(23) a. wo zhidao [ta zhu zai nar]. a'. ta zhu zai nar, wo zhidao.
I know he live loc. where he live loc. where I know
'I know where he lives.' 'I know where he lives.'

b. ta zancheng [yi nian fencheng lia xueqi].
he approve one year divide two semester
' He approves that a year is divided into two semesters.'

b'. yi nian fencheng lia xueqi, ta zancheng.
one year divide two semester he approve
'He approves that a year is divided into two semesters.'

(24)a. laoshi de toufa bei [xueshengmen jiao le] .
teacher poss. hair bei students cut asp
'The teacher's hair was cut by the students.'

b. * xueshengmen jiao le, laoshi de toufa bei .
students cut asp teacher poss. hair bei

2)If we put 'know' in the substitution slots in (19-20), we'll get the same controllers for 'sad' and 'sleepy' as in sentences with 'see' and 'hear', but different from the controllers in *bei* sentences in the same triples. This also contradicts what the modified lexical form of *bei* would predict.

It seems that we have exhausted all the possible identities of the NP following *bei*: it can neither be an oblique of the passive verb marked by *bei*, nor the object of *bei* as shown in section 2, nor can it be the subject of the complement sentence as shown in this section. Then what on earth can it be?

4. Reconsideration of the objecthood of NP2

We may have jumped to the conclusion that the NP following *bei* is not an object a bit too soon: there are objects of VPs with certain grammatical functions that cannot be rearranged, for example

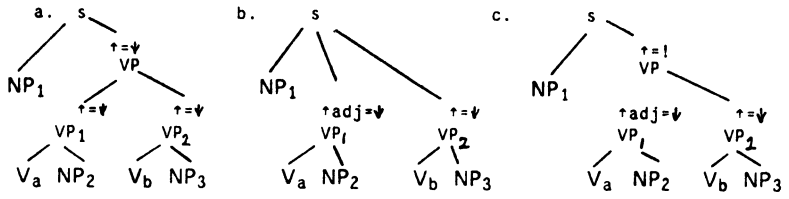
(26)a.ta mai le che. b. che, ta mai le. c.ta mai che huan le zhang.
he sell asp bike bike he sell asp he sell bike return asp debt
'He sold the bike.' 'He sold the bike.' 'He returned the money by selling the bike.'

d. * che,ta mai huan le zhang. d'.zhang, ta mai che huan le .
bike he sell return asp debt debt he sell bike return asp
(c.f.b&d') 'He returned the money by selling the bike.'

From the above examples, we notice that in a sentence like (26)a, the object which can be rearranged as in (26)b, when it is the sole object in the sentence, can no longer be rearranged when its clause joins another one which, in the combined sentence such as (26)c, follows it and shares the same subject with it.

So the non-parallelism with *rang* sentences cannot falsify the objecthood of the NP following *bei*, if we can show that *bei* phrases have the same function as the first VP in (26)c does. Then, what is the annotated c-structure of (26)c? There can be 3 possibilities

(27)



Why should there be only three possibilities instead of five? That is, why can't we consider the VP on the right as the adjunct to the VP on its left? For one thing, this has something to do with the Chinese c-structure. As Huang(1984) notices,'within a given sentence in Chinese, the head (the verb or VP) may branch to the left only once, and only on the lowest level of expansion'. [3] For another thing, the observation that the NP dominated by VP_1 cannot be topicalized, but the one dominated by VP_2 can also suggests that VP_1 is an adjunct to VP_2, the head. In Chinese, as in other languages, NPs within adjuncts cannot be extracted. It is unlikely that (26c) has the coordinate structure (27)a, since in a coordinate structure, each coordinated VP together with its subject can be a good sentence by itself (28a), but a *bei* phrase, even with its subject, cannot (28b).

(28)a. ta xi le yifu, (zuo le fan).
he wash asp clothes (cook asp meal)
'He washed clothes (and cooked meal).'

b. laoshi bei xueshengmen *(jiao le toufa).
teacher bei students cut asp hair
'(Lit.)The teacher *(was hair-cut) by the students.'

Therefore, we can quickly discard (27)a, which is a coordinate structure with the prediction that NP_2 and NP_3 should parallel in their response to the rearranging processes, which is not the case: in (26), NP_3 but not NP_2, can be rearranged as shown in the contrast between d and d'. This tells us that VP_1 is not of the same status as VP_2. Our choice is between (27)b and c now. While in both of them VP_1 is an adjunct, there is a difference in depth: it is an adjunct of VP in (27)c, but an adjunct of S in (27)b. So far we do not have enough evidence to make a choice with between them. What we can tell is that *bei* phrases always follow other sentential adjuncts. Whether this results from its being dominated by VP instead of S or from some linear order constraint on sentential adjuncts is not clear yet. However, this uncertainty of the node dominating *bei* phrases does not matter for the purpose of this paper. It will find its mother node when the issue becomes essential in further research. Now we are going to look at what predictions considering *bei* phrases as adjuncts makes and check if those predictions are borne out.

4.1. Matrix v.s. subordinate status of bei

While the argument structure of bei (14) cannot account for why the NP following bei cannot be rearranged, it being the object of the matrix predicate; analysing *bei* phrases as adjuncts correctly predicts that it cannot be rearranged due to the inextractability of NP's within adjuncts. Such is also the case in English.

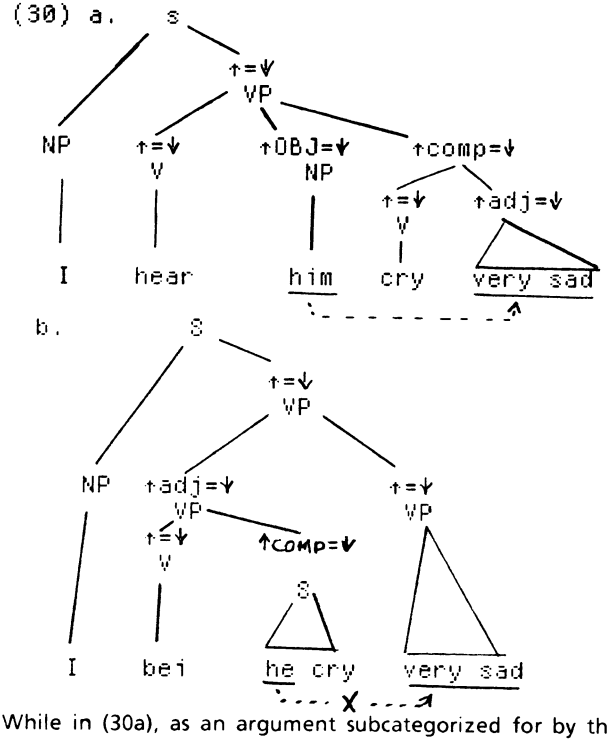
(29) a.John wanted Mary to watch TV.

a' What did John want Mary to watch?

b.John cursed his luck, watching TV.

b'. *What did John curse his luck, watching?

The contrast in the controllers of 'sleepy' and 'sad' between a's and b's of (19-20) also results from this subordinate status of bei phrases: the a's have (30)a, but the b's have (30)b as their c-structures, respectively.



While in (30a), as an argument subcategorized for by the matrix predicate, 'him' controls 'sad', in (30b) the argument of the adjunct predicate 'he' cannot control 'sad'. Similar phenomena can be found in English as well.

(31) a. Mary expected him to be too anxious to wait.

b* Mary, expecting him, was too anxious to wait.

4.2. The dispensability of bei phrases

The semantic role of an adjunct is to make the meaning of the matrix predicate more specific so that the whole sentence gets, as its complete meaning, the intersection of the matrix predicate meaning and the adjunct meaning. The meaning of the sentence with the adjunct entails its counterpart without the adjunct. This is true of Chinese *bei* sentences: the *bei* phrase disambiguates the corresponding sentences without this adjunct, which usually have both the active and non-active readings:

(32)a. laoshi jiao le toufa.
teacher cut asp hair
'The teacher cut his hair.' or
'The teacher got his hair cut.'

a'.laoshi bei xueshengmen jiao le toufa.
teacher bei students cut asp hair
'(Lit.) The teacher was cut by the students at hair.'

b. Lisi jiang le gongzi.
Lisi cut-down asp salary
'Lisi cut down his salary.'or
'Lisi had his salary cut down.'

b'.Lisi bei laoban jiang le gongzi
Lisi bei boss cut-down asp salary
'(Lit.) Lisi was cut down by the boss at salary.'

While our proposal considers the function of *bei* phrases as an adjunct and explains its dispensability, both (14) and (21), considering *bei* as a main verb, predict that the omission of *bei* phrases would make the remaining arguments--the matrix subject and the complement object unrelated individuals and make the sentence uninterpretable. This prediction is counterargued by the well-formedness of (32)a and b.

4.3 Lexical rather than structural ambiguity

As a matter of fact, of all the *bei* sentences we have talked about so far, their counterparts without *bei* phrases convey passive as well as the active reading, be *bei* followed by a null pronominal, or an overt NP, or a sentence. Without context, the following sentences are ambiguous[4].

(33) a. ji chi le naodai.
chicken eat asp head
'The chicken's head was eaten.'or
'The chicken ate the head (of the dough figure).'

b. laotou kan-bu-jian le
old-man see-not-perceive asp
'The old man could not see.'or
'The old could not be seen.

Now the question is whether the ambiguity in sentences like (33) is lexical or structural. In other words, which will the better account for the ambiguity be, to consider the verbs as homonyms meaning both 'eat' and 'eaten', 'see' and 'seen', or to attribute the two readings to two different structures, i.e.

(34)a. $[_S\ NP_1\ V\ NP_2]$ b. $[\bar{S}NP_i\ [_S\ pro\ V + NP\ t_i]]$

The difference between the two structures is to consider 'chicken' as the subject in the former, but an object preposed to the topic position in the latter. In Chinese, there is almost no way to tell a subject in situ from a topicalized object followed by a null subject, since Chinese has neither subject-verb agreement nor case marker and subjects and topicalized objects have the same response to all the rearranging tests we can think of. This time the interaction between topicalizing and embedding serves as a good test: though the objects in matrix sentences can always be topicalized as shown earlier in (16)b, the objects in the embedded clauses cannot.

(35)a. mao chi le ji naodai. -->
cat eat asp chicken head
'The cat ate the chicken's head.'

a'. mao chi le ji naodai nei jian shi.
cat eat asp chicken head that class. matter
'the fact that the cat ate the chicken's head'

b.ji chi le naodai. -->
chicken eat asp head
chicken's head was eaten.'
or'The chicken ate the head.'

b'. ji chi le naodai nei jian shi.
chicken eat asp head that class.tice tha'The
'the fact that the chicken's head was eaten'
or 'the fact that the chicken ate the head'

(36)a. ji, mao chi le naodai. -->
chicken cat eat asp head
'As for the chicken, the cat ate its head.'

a'. ??ji, mao chi le naodai nei jian shi.
chicken cat eat asp head that class. matter

Notice that there is a contrast in acceptability between (35)a' & b' and (36)a' due to the normal word order in the embedded clause in the former, but a preposed object in the embedded clause in the latter, but no such contrast between (35)a' and b', which proves that the embedded clause in (35)b', like that in (35)a', has the normal word order, otherwise it would be as bas as (36)a'. Thus (34)b must not be the structure for (33)a --'chicken' is the sentence subject in its passive reading as well as in its active reading. That is, the ambiguity comes from the lack of morphological specification of voice, which is also witnessed in compounds

(37) a. lie-shou a'.lie-wu
hunt-hand hunt-stuff
'hunter' 'game'

b.ai-xiao b'.ai-ren
love-trivial love-person
'greedy in a shortsighted way' 'spouse'

c. xi-ren c'.xi-se
please-people please-countenance
'pleasant' 'pleased look'

d.shi-ke d'. shi-pin
eat-guest eat-stuff
'subordinate consultant' 'food

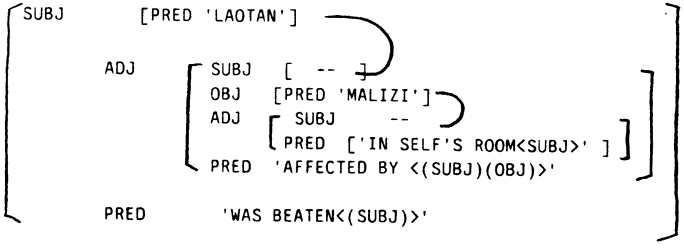
In the above compounds, the same verb morphemes have a passive reading in the righthand column, but an active reading in the lefthand collumn and there is no change of form in the verb morpheme, unlike the English examples 'painstaking' v.s. 'henpecked'.

So the difference between *bei* sentences and their counterparts without *bei* phrases is not analogous to that between passive and active sentences in English -- A *bei* phrase serves as adjunct to the matrix predicates, which are unspecified for voice, and makes the meaning more specific, while the voice specification is lexically done in English. **5**

To sum up, the argument structure of *bei* is neither (14), nor (21), but (38), which assigns to (13)b the f-structure(39) instead of (15).

(38) bei V 'affected by <(subj),(obj)/(scomp)>'

(39)



There is nothing (14) can account for but (38)can't, whereas (38) has three borne-out predictions (14) does not, namely, the inability of the NP following *bei* to be

rearranged, the coindexing of the resultative adjunct with the matrix subject, and the dispensability of *bei* phrases.

One more point about the lexical form of *bei*. In the lexicon, it should be specified that *bei* never appears as the matrix predicate unlike other transitive verbs, which can either be matrix predicates, or adjunct predicates as shown in (26). This specification does not make our account more complicated than others', since this peculiarity of *bei* has to be specified any way.

Footnotes

* I am in debted to Joan Bresnan, Jonni Kanerva, Lizi Ma, Bill Poser, and Michael Wescoat for their comments and what I have learned through revising the present paper with their insightful criticism in mind will benefit me in future research as well.

*1*As for Ma(1985) reasoning, that the object of PP is never null is confirmed in Li & Thompson(1981); but that the obliques are always accompanied by a preposition (or postposition) is questionable, for example

I. a. shui jin le yi-lou.	a'. yi lou jin le shui.
water enter asp 1st-floor	1st-floor enter asp water
'Water entered the first floor.'	'Water entered the first floor.'
II. a. yi jian fang zhu lia ren.	a'. lia ren zhu yi jian fang.
one class. room live two person	two person live one class. room
'In one room live two persons.'	'Two persons live in one room.'

Here 'first floor' and 'one room' are not accompanied by any preposition at all. We cannot, however, deny that they are obliques, because otherwise we would be saying that in Chinese subjects and objects may exchange.

*2*While it may be true that only subjects bind a reflexive, given that the reflexive is dominated by a non-branching NP, the binding of a reflexive dominated by a branching NP (the reflexive possessor) to the subject but not any non-subject as in (13b) is only an artifact of the specific verb 'give' used in (13b): the things given should always be the giver's belonging but never the receipient's. If we substitue, for 'give', other verbs such as *huangei* 'return' or *digei* 'hand', the recipient objects as well as the agent subjects can bind the reflexive possessor.

*3*In Huang(1982), double object constructions and constructions involving complements to 'control' verbs are sanctioned by marked features of the verbs, which require both constituents following them to be subcategorized-for elements.

*4*More transitives are ambiguous in voice in Chinese than not, unless thematic or pragmatic clues exclude either of the two readings.

a. Shu nian le wu bian.	a'. Wo nian le wu bian.
book read asp five time	I read asp five time
*'The book read (it)five times.'	'I read (it) five times.'
'The book was read five times.'	*' I was read five times.'
b.Mary da le.	b' Mary da le wo.
Mary hit asp	Mary hit asp me
'Mary hit somebody.'	'Mary hit me.'
or 'Mary was hit.'	*'Mary was hit.'

[5]Using adjuncts to specify voice may be just a subset of the more general difference between Chinese and English: Comparatives and tenses which are lexically done in English are again specified by adjuncts in Chinese.

I was a farmer. I am a student. I'll be a teacher.

translated into Chinese, will have the gloss

I before be farmer. I now be student. I future be teacher.

All forms of adjectives are homonyms: the base and the comparative forms are alike, for example

a. zhe liangkouzi hen jiling.
this couple very smart
'This couple are very smart.'

a'. liangkouzi, shui jiling,shui zhushi.
couple whoever smart whoever control
'Between husband and wive, the smarter one controls the situation.'

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Indirect transitives in Georgian
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Georgian, the major language of the South Caucasian (Kartvelian) family, has received a degree of notoriety for its complex pattern of case assignment, a paradigm example of split ergativity [in fact, all three varieties of split ergativity recognized by Dixon 1979; see Boeder 1979 for an excellent and concise presentation]. Georgian indicates grammatical relations by means of both nominal case and crossreferencing verb morphology, with somewhat different patterns of marking in the two systems. Kartvelian verb stems divide into two primary lexical classes commonly labelled **active** and **passive** [Shanidze 1953:289-90]. The labels are rather misleading - many verbs in the passive class are agentive (e.g. verbs of directed motion), while a few formally active verbs are semantically stative (**arsebobs** "s/he,it exists"; **q'vavilobs** "it blooms") [Harris 1981:268-74]. Also, while many active verbs are transitive, a sizeable subclass of them is not [Holisky 1981a]. What does distinguish the two classes is case and agreement patterning. Active verbs undergo **case shift** in certain tense/mood paradigms, while passives do not. The correlation between typical semantic roles and formal markers for verbs of the two classes in each of the three tense-mood series is laid out in (1).[1] The Kartvelian languages employ two sets of agreement affixes, termed Set V ("subject") and Set M ("object" - which, in the 3rd person, distinguishes Md "direct" and Mi "indirect object" affixes).

(1)

	ACTIVE STEM			PASSIVE STEM	
	AGENT	PATIENT	IP (rec/ben)	THEME	IP
Series I					
agr.	V	Md	Mi	V	Mi
case	NOM	DAT	DAT	NOM	DAT
Series II					
agr.	V	Md	Mi	V	Mi
case	ERG	NOM	DAT	NOM	DAT
Series III					
agr.	Mi	V	---	V	Mi
case	DAT	NOM	[+ postp]	NOM	DAT

A sample conjugation of the active and passive stems derived from the root **gzavn**-"send" is given in (2) and (3).

(2a) ACTIVE

Series I shvil-eb-i c'eril-s ga-u-gzavni-an mama-s
[child-PL-NOM letter-DAT will-send-I-3pl/3/3 father-DAT]

Series II shvil-eb-ma c'eril-i ga-u-gzavn-es mama-s
[child-PL-ERG letter-NOM sent-II-3pl/3/3 father-DAT]

Series III shvil-eb-s c'eril-i ga-u-gzavni-a-t mam-isa-tvis
[child-PL-DAT letter-NOM have-sent-III-3/3pl father-GEN-for]

"The children will send/sent/have sent their father a letter."

{2b} PASSIVE

Series I,II,III

ga-e-gzavneb-a
c'eril-i ga-e-gzavn-a shvil-s
ga-h-gzavnebi-a

[letter-NOM will-be/was/has-been-sent-3/3 child-DAT]
"The letter will be sent/was sent/has been sent to the child."

The shift in case patterning for active verbs between series I and II is of a type seen in many of the world's languages [Dixon 1979,De-Lancey 1981]. Active verbs in series III undergo what Harris [1981:ch 8] terms **inversion** - essentially conversion into the moral equivalent of a passive with a dativus auctoris indirect object. This phenomenon occurs in the other Kartvelian languages as well [Harris 1985:271-327]. Many Georgian and Western European linguists, confronting the complex relation between case, agreement and semantic role just illustrated, have resorted to a terminological distinction between "real" and "grammatical" subject and object [Schuchardt 1896; Chikobava 1967,1968; cp Shanidze 1963]. Grammatical subjecthood is usually defined in terms of person agreement: that argument crossreferenced by Set V person affixes is the grammatical subject (GS). So, for the sentences in {2a}, the GS would be bavshveb- for the Series I and II examples, and c'eril- for the Series III example. For the passive verbs in {2b}, c'eril- is the GS in all three series. The correspondence of GS to RS for the verbs in {2} is shown in {3}.

{3}

	ACTIVE STEM			PASSIVE STEM	
	agent	patient	IP	theme	IP
Series I,II	GS/RS	GDO/RDO	GIO/RIO	GS/RS	GIO/RIO
Series III	**GIO/RS**	**GS/RDO**	**---/RIO**	GS/RS	GIO/RIO

The notion of "real" subject (RS) was defined in terms of agentivity, with the most agentive core argument in the clause designated RS. While the category is clearly an import from the west, it is in fact the case that the RS is more likely to come first in the sentence [Apridonidze 1986:17-21], be represented by a zero anaphor [Enukidze 1978:74], bind reflexive and reciprocal pronominals [Harris 1981:24], and be the coreferential argument in control con-structions [Harris 1981:154-6]. While any 1st or 2nd person NOM,DAT or ERG argument, that is, any 1st or 2nd person **term**, can govern number agreement in modern Georgian, regardless of syntactic role, only 3rd person RSs have this privilege [Harris 1978; Aronson 1976]. Series III inversion is not the only case of non-overlap between GS and RS. In Georgian, as well as in the other Kartvelian languages, there is a large subclass of passive verbs of perception, emotion and sensation (e.g. u-q'var-s "s/he<DAT> loves her/him<NOM>; e-smi-s "s/he <DAT> hears/understands it<NOM>; e-mc'areb-a "s/he<DAT> finds it<NOM> bitter-tasting" [Merlan 1982]. The DAT argument associated with these verbs denotes the experiencer of some physical or psychological phenomenon, and the NOM argument denotes the object of the experience.[2] In such cases, note, the DAT experiencer outranks the NOM theme on the agentivity hierarchy and serves as RS. I will term these **indirect**

passive verbs, following the usage of K.Tschenkeli 1958:490]. The significance of the indirect passive subclass should not be underestimated. Its existence indicates that neither formal verb-stem criteria nor case and person-agreement patterning are sufficient to indicate RS status, the only morphological characteristic of which, as mentioned above, is ability to govern number agreement in all three persons. While the direct/indirect distinction has long been recognized for passive verbs, it is only very recently that descriptions of what we might call indirect active, more precisely, **indirect transitive** verbs appear in the Georgian linguistics literature [Jorbenadze 1983:82-83;K'iziria 1985]. All Georgian transitives, save for a handful which are formally passive [Harris 1981:268-74] manifest the pattern of case marking and person agreement shown in {1}. Included in this class are transitive verb stems of the sort shown in {4} and {5}:

{4}	**Indirect transitives:**	**RS = GDO**
a.	da-a-elmeb-s:	sthg makes sb crosseyed
b.	da-a-k'ut'eb-s:	sthg makes sb crippled
c.	ga-a-p'irkusheb-s:	sthg puts sb in a bad mood
d.	ga-a-rindeb-s:	sthg makes sb mute
e.	agh-a-t'q'ineb-s:	sthg makes sb ecstatic
f.	da-a-pikrianeb-s:	sthg makes sb pensive
g.	agh-a-prtovaneb-s:	sthg thrills sb
h.	a-a-caxcaxeb-s:	sthg makes sb tremble

{5}	**Indirect transitives:**	**RS = GIO**
a.	a-u-k'ank'aleb-s:	sthg makes sb's sthg[e.g.hands]shake
b.	da-u-manch'av-s:	sthg [e.g.pain] distorts sb's face
c.	a-u-msuq'eb-s:	sthg [rich food] sates sb's heart
d.	she-u-rujav-s:	sthg [flame] singes sb's sthg[e.g.hair]
e.	a-a-t'k'iveb-s:	sthg makes sb's sthg [body part] hurt
f.	a-u-panckaleb-s:	sthg makes sb's heart fibrillate
g.	u-cxuneb-s:	sthg [sun] burns sb's sthg [body part]
h.	u-jijgni-s:	sthg torments sb's heart

The verbs in {4} and {5} only allow inanimate agents (or sources). The patients in {4} and the inalienable possessors in {5} are obligatorily animate, usually human. Though otherwise formally indistinguishable from direct transitives, the number agreement pattern for indirect transitives is somewhat different.[3] The agents of these verbs, if plural, will almost never govern plural NA. This reflects a more general principal in modern Georgian, especially the spoken register, that animate RSs always govern NA in the verb, but inanimate RSs rarely do so [K'vach'adze 1977:99-104].

{6}a. jarisk'ac-eb-i ezo-shi dga-nan/*dga-s
[soldier-PL-NOM yard-in stand-I-3pl/*stand-I-3sg]
"Soldiers are standing in the garden."
b. cacxv-eb-i ezo-shi dga-s/dga-nan
[linden-tree-PL-NOM yard-in stand-I-3sg/stand-I-3pl]
"Linden trees are standing in the garden."

More interesting is the agreement behavior of plural **objects** of indirect transitives. As with indirect passives, the grammatical **object** (either GDO or GIO as the case may be),may govern plural NA if plural, and, indeed, take on other properties characteristic of RSs. Here is a 19th century example collected by A.K'iziria [1985:109]. The verb agrees in number with the 3rd plural GIO (inalienable possessor of the GDO), not with the GS "sleep."

{7} mere dzili **mo-s-t'aceb-t** tvals 0.
[then sleep-NOM abduct-I-3/3pl/3 eye-DAT 0-3pl-DAT]
"Then sleep will carry off their eyes." (G.Shat'berashvili)

Given the existence of both direct and indirect relation correspondences for both active and passive verbs, fig {3} stands in need of revision, as follows:[4]

{8}	**DIRECT**	**active**			**passive**	
	agent	patient	IP	theme	IP
Series I,II	GS/RS	GDO/RO	GIO/RO	GS/RS	GIO/RO
Series III	GIO/RS	GS/RO	---/RO	GS/RS	GIO/RO
	INDIRECT				
Series I,II	GS/RO	GDO/RS		GS/RO	GIO/RS
or:	GS/RO	GDO/RO	GIO/RS		
Series III	GIO/RO	GS/RS		GS/RO	GIO/RS
or:	GIO/RO	GS/RO	---/RS-chomeur		

In the course of reading contemporary Georgian literature I have run across a couple dozen cases of indirect transitives with plural patients, two of which I give here:

{9} me megobari ghvtis c'q'alobit bevri mq'avs, tanac isetebi$_i$ arian, st'umroba tu ganizraxes, veranairi amindi ver **daabrk'oleb-t** 0$_i$. [I-DAT friend-NOM god-GEN grace-INS many have-I-3/1, also such-NOM-PL are-I-3pl, guesthood-NOM if intend-II-3pl/3, no-kind weather-NOM cannot hinder-I-3/3pl 0-3pl-DAT]
"By the grace of God I have many friends; furthermore they are the sort of people that if they have decided to visit, no kind of weather can hinder them."
(J.Karchxadze;in Mnatobi#1:70 [1986])

{10} ar vici, ikneb mat$_j$ tvalshic ucnauri vchanvar da amit'omac meridebian. ucxo, dak'virvebuli mzera makvs da sheidzleba esec **ak'rtob-t** 0$_j$.
[not know-I-1/3,perhaps their eye-in-too odd appear-I-1 and therefore avoid-I-3pl/1. strange attentive look have-I-3/1 and possible-is this-too spook-I-3/3pl 0-3pl-DAT]
"I don't know, I must seem odd to them, and so they avoid me. I have a strange attentive gaze, and perhaps this, too, spooks them."
(M.Xucishvili; short story "Ganc'menda"[1985])

The animate GDOs and GIOs of the above verbs govern NA, despite the presence of a more agentive core argument in the clause. This

means that rank on an agentivity hierarchy alone is not sufficient to determine RS-hood. The plural NA marker in all of these examples is -t, the same affix used in conjunction with the 3pl DAT agent of the Series III active verb in {2}, and with 3pl DAT experiencers of indirect passive verbs (e.g. **mat xach'ap'uri mo-s-c'on-t** [they-DAT cheese-bread-NOM like-I-3/3pl]). Not all of the indirect transitives in exs {7}-{10} **obligatorily** subcategorize for inanimate agents. There is in fact a sizeable number of Georgian verbs which swing both ways, functioning as either direct or indirect transitives (from the point of view of agreement morphology) depending on the animacy of the agent, or on factors of focus and even lexical meaning. Some representatives of this subclass are listed in {11}.

{11} LABILE TRANSITIVES

a. da-a-int'ereseb-s:	sb/sthg interests sb
b. ga-a-k'virveb-s:	sb/sthg surprises sb
c. da-a-mt'vrev-s:	sb/sthg makes sb extremely tired
d. da-a-mdzimeb-s:	sb/sthg burdens sb
e. da-a-naghvleb-s:	sb/sthg troubles sb
f. ga-a-oceb-s:	sb/sthg astonishes sb
g. she-a-c'uxeb-s:	sb/sthg bothers sb
h. ga-a-xareb-s:	sb/sthg makes sb rejoice

One characteristic of labile transitives is that properties tied to RS status (e.g. the Georgian equivalent of the Nominative Island Constraint) will shift from the GS to the GO depending on the direct/-indirect status of the verb. Consider the binding behavior of the two principal arguments of **daaint'eresebs**, in its direct (a) and indirect (b) uses.

{12}a. es gogo-eb-i ertmanet-s a-int'ereseb-<u>en</u> zghap'rebit
[these girl-PL-NOM each-other-DAT interest-I-3pl/3 tales-INS]
"These girls are getting each other interested in folk tales."

b. am gogo-eb-s ertmanet-i a-int'ereseb-<u>t</u>
[these girl-PL-DAT each-other-NOM interest-I-3/3pl]
"These girls are interested in each other."

Note the shift in meaning between the two sentences in {12}. The direct use of the verb requires an additional argument in the INS case, while the indirect use, with a stative rather than change-of-state meaning, does not. Literally, {12a} is "These girls interest each other with folk tales;" {12b} would be something like "Each other interest the girls." [5] This indicates that semantic factors - often rather subtle - can bring about a shift of both morphological and syntactic RS properties from one argument to another, independently of the agentivity hierarchy. Number agreement between indirect transitive verbs and their animate patients, possessors and benefactives is not as automatic as that between direct transitives and their (animate) agents. Several factors contribute to the presence or absence of NA; so far I have isolated three of them, which I will briefly discuss here.

Word order: For some of my Georgian consultants, but not others, which argument immediately precedes the verb is crucial for determining the pattern of NA. Compare these sentences:

{13}a. am k'ac-eb-s s-c'vav-t sircxvil-i
[these men-DAT burn-I-3/3pl shame-NOM]
b. am k'ac-eb-s sircxvil-i s-c'vav-t/-s
"these men burn with shame."

Both sentences have the same meaning. Placing the grammatical subject before the verb increases its chances of blocking NA with the animate GDO (RS).

Anaphora: In the examples given in {9}-{10}, the indirect transitive agrees in number with a zero anaphor having plural reference. It is indeed the case that more highly presupposed arguments are more likely to govern NA. Speech act pronominals, which are presupposed by the act of speaking itself [Silverstein 1981] govern NA more readily than 3rd person forms, and among the latter, NP types associated with topicality (anaphors; NPs denoting animate, more agentive arguments) are favored by the NA mechanism. My consultants confirmed that NA with the 3pl DAT RS of an indirect transitive verb was more to occur if the argument in question is represented by a zero anaphor than by an overt NP.

Aspect and series: One of the central categories around which the Georgian verbal system is organized is aspect. As in the Slavic languages, perfective vs. imperfective aspect is correlated with the presence vs. absence of a prefix of more or less directional meaning [Mach'avariani 1974; Schmidt 1985]. Series I verbs can be used with or without prefixes - in this way the future and conditional (with prefix) are distinguished from the present and imperfect (without). Verbs inflected for Series II or III are rarely used without prefixes; this is especially true of Series III [Pxak'adze 1984:37-78]. In the case of indirect transitives, series III presents an interesting situation. As shown in fig {8}, inversion has vastly different effects on the relational structure, depending on whether the GDO or GIO is the RS in series I and II. For verbs of the first type (e.g. the verbs in {4}) series III inversion in a sense undoes the effects of inversion, "restoring" the RS to GS status. For verbs of the second type, inversion demotes the animate argument to a postpositional phrase. As it turns out, series III forms of RS=GIO type indirect transitives are in fact extremely rare.[6] However, the primary factor determining the acceptability of these forms is the lexical aspect of the verb, not its argument structure [on Georgian lexical aspect see Holisky 1979, 1981b]. Indirect transitives fall into two main groups: those that focus on states (usually psychological), and those that describe changes of state. Several of the verbs in {4} and almost all of those in {11} are of this first type.[7] As one would expect, the perfective stem forms of these verbs are marked, though not unacceptable. However, my consultants deemed NA with the grammatical object to be more unlikely, or even impossible, for prefixed forms of indirect verbs.[8] In the case of change-of-state indirect transitives (e.g. about

half of the verbs in {4} and {5}) certain prefixed forms, even without plural NA with 3rd person objects, seemed very artificial to Georgian speakers. Among indicative-mood forms, present (i.e. non-prefixed) indirect transitives were almost always acceptable, future and aorist forms were occasionally rejected or disfavored, and (Series III) present perfect forms of indirect transitives - although listed in Tschenkeli's three-volume dictionary - were rarely judged to be acceptable. Whenever an indirect transitive was disfavored, a monopersonal passive with an oblique agent phrase was substituted. For example, the present, future and aorist forms of **gaabelat'ebs** "it makes him bald" were deemed acceptable by one of my consultants, but the present perfect sounded odd. She was much happier with the present perfect of the corresponding passive:

{14} a. (aorist) sibere-m k'ac-i ga-a-belat'-a
[age-ERG man-NOM make-bald-II-3/3]
"Age made the man bald."
b. (pres pf) ?? sibere-s k'ac-i ga-u-belat'ebi-a
[age-DAT man-NOM make-bald-III-3/3]
c. (passive pres.pf) siber-isa-gan k'ac-i ga-belat'ebul-a
[age-GEN-from man-NOM is-made-bald-III-3]
"The man has become bald from age."[9]

DISCUSSION: Though indirect and labile verbs are in the minority compared to direct ones, they are important indicators of typological changes within the Kartvelian family. I will discuss one of them here. While the case assignment and person agreement mechanisms in Georgian have undergone relatively little change since the earliest attested period (5th century AD), number agreement patterning has changed profoundly from Old Georgian to the modern language [Cole et al 1980;Tuite 1985]. Case has declined in importance as a determiner of NA, and animacy has become a more central criterion. In Old Georgian no DAT argument governed NA[10] while any ERG and NOM argument, including the patients of Series II and III active verbs had this morphological privilege [Shanidze 1982:75]. The following examples come from Old Georgian:

{15} c'ina-uk'ana i-ar-**n**-es or-n-i dghe-n-i da ghame-n-i
[front-back go-II-3pl/3pl two day-PL-NOM and night-PL-NOM]
"Two days and two nights they travelled, one after the other."
[Vepxist'q'aosani 215:1] (cp ModGeo iares orni dgheni da ghameni)
{16} vitarca e-sm-**n**-es mepe-sa sit'q'wa-n-i ese
[as hear-II-3pl/3 king-DAT word-PL-NOM this]
"As the king heard these words.." [Sibrdzne Balavarisi I:30]
(cp ModGeo esmoda mepes es sit'q'vani)

In example {15}, a Class A verb in series II agrees in number with its plural NOM object "two days and nights." The indirect passive verb smena "hear" in {16} agrees in number with its NOM theme, but not with its DAT experiencer. Note that in both cases an **inanimate** NP controls NA. In the conservative mountain dialects of Pshavi and

Xevsureti, NA is extended to 1st/2nd person arguments, but not 3rd person, even if serving as the RS of inverse or indirect verbs [Gogolauri 1978].

{17} q'mac'vil-eb-s u-tkom-**0** [Gigineishvili et al:24,12]
[boy-child-PL-DAT say-IIIa-3/3]
"The children have said it." (cp ModGeo q'mac'vilebs u-tkvam-t)

Number agreement in -n- with plural direct objects of series II transitive verbs is still attested in these dialects, especially in texts collected before the second World War:

{18} iman ise-n-i ga-i-cil-**n**-a [ibid:116,7]
[s/he-ERG them-PL-NOM accompany-IIa-3/3p]
"She accompanied them." (cp ModGeo iman iseni ga-i-cil-a)

In several eastern and northwestern dialects (Kaxetian, Fereidanian, Imeretian, etc.) **any** term argument in **any** person, especially if animate and topical, can govern NA [Chikobava 1968:276-7; K'iziria 1974]. The following passage is in the Kaxetian dialect [Gigineishvili et al:207,12]:

{19} shemo-id-nen q'acheg-eb-i_j. upros-i e-ubneb-a-t 0_j
[enter-IIp-3pl bandit-PL-NOM. boss-NOM tell-Ip-3/3pl]
"The bandits entered. The boss says to them...."

The suffix -t in the second verb marks the plurality of the addressee (the bandits). Note that this plural marking occurs even though the RS/GS of the verb is itself animate. So, in these dialects, unlike Tbilisi Georgian, the **relative** salience of RS and RO is not relevant in determining the presence of object agreement, but rather the prominence of the individual argument as such. GDO's in the 3rd person can also govern NA, though this is less commonly attested. In this Lower Imeretian example, the suffix -q'e(n) indicates the plurality of a grammatical object, in this case the patient [Gigineishvili et al:467].

{20} shvil-eb-i gamo-v-zard-e-**q'en** rva ertat.
[child-PL-NOM raise-II-1/3pl eight together]
"I raised eight children all together."

The resemblance to NA with NOM direct objects in Old Georgian is only superficial. The Old Georgian phenomenon was strictly conditioned by surface case, the Imeretian one by animacy and topicality. Modern standard Georgian, the dialect spoken by educated Tbilisi residents (such as my consultants) is, I believe, in an intermediate position between Old Georgian and Kaxetian. I have attempted to represent the number-agreement situation in the dialects mentioned here in fig {20}. X indicates NA (for animate arguments) in all three persons; 1/2 = NA in 1st and 2nd person only; (1) = prefixal 1st plural NA only.

{20}		OldGeo	Ps/Xev	ModGeo	Fer/Imer
class A					
ser.I	NOM	X	X	X	X
	DAT	(1)	1/2	(X)	X
ser.II	ERG	X	X	X	X
	NOM	X	X	1/2	X
	DAT	(1)	1/2	1/2	X
ser.III	DAT	(1)	1/2	X	X
	NOM	X	X	1/2	X
class P - direct					
all	NOM	X	X	X	X
	DAT	(1)	1/2	1/2	X
class P - indirect					
	DAT	(1)	1/2	X	X
	NOM	X	X	1/2	X

Two primary trends are represented in this chart. On the one hand, the morphological prominence of NOM case arguments - a remnant of the ergative typology reconstructed for Common Kartvelian [Harris 1985] - decreases from Old Georgian to Modern Georgian, with Pshav-Xevsurian representing a conservative holdout. On the other hand, as case decreases in importance, NP type increases, following this scale:

{21} 1st > 2nd > 3rd real subject > 3rd topical/animate

This says a lot about the significance of **subject** as a grammatical category in the various dialects of Georgian. If we take "real subject" as the closest Georgian equivalent - on semantic and syntactic grounds - to what we call subject in Standard Average European languages, then we note a surprising lack of morphological "privileges" attaching to it. Neither case marking nor person agreement pick it out in any straightforward way, in any of the dialects mentioned above.[11] Nor does number agreement, with the exception of Tbilisi Georgian and those dialects of similar structure [Kartlian, Javaxian], where only the RS can govern NA if 3rd person. But, rather than being an end in itself, the morphological prominence of the RS in standard Georgian appears to be only a way station between the ergative morphology of Common Kartvelian and the topicality/animacy-based system found in dialects like Kaxetian and Imeretian.[12]

notes

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1. The following should make fig.(1) more comprehensible. The Georgian verb, of whichever stem class, takes further markings indicating its membership in one of three series of tense-mood paradigms:
SERIES I: present, future, imperfect, conditional, etc.
SERIES II: aorist, optative, (non-negative) imperative
SERIES III: present perfect/evidential, pluperfect
In glossing Georgian verbs I will indicate series (by roman numeral), and person, in the order V/Mi/Md.Georgian declension comprises six cases: NOMinative, ERGative, DATive, GENitive, INStrumental, ADVerbial. The semantic roles given in (1) are only the most typical - many formally passive verbs have agent subjects (e.g. verbs of directed motion). 'IP' stands for **interested party**, a catchall rubric for addressees, recipients, benefactives, experiencers, and similar semantic wallflowers.
2. A not inconsiderable number of verba sentiendi do not subcategorize for a NOM argument [Tschenkeli 1958:594-7;Shanidze 1961:223]. Since the morphotactics of the Kartvelian languages require the presence of a Set V affix on every finite verb [Oniani 1978:40], these verbs are formally speaking bipersonal, with a Set Mi affix crossreferencing the experiencer, and a 3sg Set V affix crossreferencing, if you will, a NOM case dummy. Some examples are: **mas h-ghvidzav-s** [s/he-DAT is-awake-I-3/3]; **mas e-mtknareb-a** [s/he-DAT feels-like-yawning-I-3/3].
3.In the discussion to follow, all statements about number agreement (NA) will in fact be statements about **3rd person** number agreement. As mentioned above, NA with 1st or 2nd person arguments is not dependent on syntactic role, and therefore does not differ between direct and indirect forms of a given verb class.
4. Georgian is not the only Kartvelian language with a class of indirect transitives. Such verbs are found in Mingrelian and Svan as well. As in Georgian, the grammatical object can govern NA in the 3rd person, though the number of verbs allowing this NA pattern is smaller than in Georgian. Here are two examples, elicited from Elisabedi Gazdeliani (Svan - Lent'ex dialect) and Maq'vala Xarebava (Mingrelian).
(i) [SVAN] sk'odi javr gvis x-o-c'xvavd-a-x al ch'q'int'i dedes i mamas [deep worry-NOM heart-DAT trouble-I-3/3pl/3 this boy-GEN mother-DAT and father-DAT]
"Deep worry [agent,GS/RO] troubled the hearts [patient,GDO/RO] of this boy's mother and father [possessor,GIO/RS]"

(ii) [MINGRELIAN] bosheps u-k'ven-a artianish ambe
[child-PL-DAT surprise-I-3/3pl each-other-GEN news-NOM]
"The children are surprised by each other's news."
lit: "Each other's news [agent,GS/RO] surprises the children [patient,GDO/RS]"
5. Similar instances of direct/indirect lability are found with passive verbs; in fact, it is much more common than for active verbs. Tschenkeli 1958:486-90 discusses the following minimal pair:

{i} gak'vetil-i e-c'q'eb-a moc'ape-eb-s xval
[lesson-NOM begin-I-3/3 pupil-PL-DAT tomorrow]
{ii} moc'ape-eb-s e-c'q'eb-a-t gak'vetil-i xval

The difference, says Tschenkeli, is one of "Betonung." The first sentence states simply that "der Unterricht beginnt." The more marked indirect version in {ii} carries the additional nuance that "die Schueler sind die 'Betroffenen' indem sie morgen beim Unterricht zu erscheinen haben." See also Jorbenadze 1981:66-75.

6. In compiling his dictionary, Tschenkeli did in fact generate series III indirect transitives of the sort I am describing here. The present perfect of, for example, a-m-i-k'ank'aleb-s "sthg makes my sthg (e.g.hands) shake" [with RS = GIO in DAT case] is given as a-u-k'ank'alebi-a **chem**-tvis lit."sthg-DAT has made sthg-NOM shake for-me" with the experiencer argument demoted to a postpositional phrase. Since neither of the verb's term arguments is animate, it is unlikely that either of them would have much in the way of RS properties. Series III constructions with RS=GDO indirect transitives (such as the verbs in {4}),are a bit less rare, being occasionally attested in Georgian literature. Pxak'adze 1984:103 cites an example from the 17th century writer Sulxan-saba Orbeliani:

{i} me niadag shensa sakme-sa ga-v-u-k'virvebi-var
[I-NOM always your affair-DAT surprise-III-1/3]
"Your affairs [source,GIO/RO] have always surprised me [exp,GS/RS]"

7. These verbs are similar, semantically speaking, to most indirect **passive** verbs, which also denote psychological or physical states. The deep-case role of the argument I have been calling the "agent" is, for stative indirect transitives, closer to that of a **source** rather than an agent as typically conceived. Correspondingly, the "patient" is much closer semantically to the experiencer arguments of indirect passives than to prototypical patients. It is even the case that some stative indirect transitives fluctuate between Class A and Class P conjugation [Jorbenadze 1983:82-3; Aronson 1985].

8. Series II indirect transitives with 3pl object NA do crop up from time to time in Georgian literature. K'iziria 1985 has found several such instances in works by 19th century authors, e.g.

{i} shimshil-ma 3lier she-a-c'ux-a-t lek'v-eb-i
[hunger-ERG greatly bother-II-3/3pl puppy-PL-NOM]
"Hunger was seriously troubling the puppies." (I. Gogebashvili)

Most of my consultants consider such constructions unacceptable in modern Tbilisi Georgian. The use of the 3pl marker -t in {i} is viewed as a (nonstandard) dialectism [on NA in the modern Georgian dialects, see the author's dissertation, due to appear before the next ice age]. There is evidence that presence of a prefix may not be an absolute bar to (3rd person) object agreement, even among fairly conservative speakers of standard Georgian. Suxishvili 1979 notes that many transitive verbs - especially causatives - can be used in the aorist with the desiderative particle net'av(i). These verbs undergo a surface

valence change, in that no ERG case NP may appear in the clause. 3rd person arguments seldom occur as objects of these modal aorists, but when they do, NA with the verb is possible if the grammatical object in question is DAT:

(ii) net'avi ga-a-k'etebin-a-(t) is mat
[may cause-to-make-II-3/3pl/3 it-NOM them-DAT]
"May they make it"
(lit."may sb/sthg cause them to make it")

The 3sg Set V marker -a in (ii) crossreferences the GS, a dummy ERG argument; the -t crossreferences the 3pl DAT RS/GIO. Similar to the above are verbs which direct the agency of some other-worldly being upon an earthling. K'iziria 1985 gives some examples, such as:

(iii) da-s-c'q'evl-o-t ghmert-ma!
[damn-II-3/3pl god-ERG]
"God damn them!"

In both cases, a more discourse-salient grammatical object is pitted against a dummy or a spirit, and receives preferential treatment by the agreement morphology [on similar phenomena in Kashmiri, also involving transitive verbs with dummy agents, see Hook 1986]. Also, note that both of these are modal constructions. These data imply that Series II constructions which do not denote completed past action are more likely to allow object NA than those that do.

9. Several types of verbs manifest a shift between active and passive stems for reasons of aspect rather than argument structure. Verbs of motion, for example, are passive if telic and active if atelic. Verbs denoting activities as such, without focussing on their beginning or end points, are active; their corresponding inchoatives are passive [Holisky 1981a]. This distinction is especially clear in series III. One can find telic/atelic pairs in Georgian where the expected passive/active stem opposition is only found in the perfect, e.g. comitative activity verbs ["X does sthg with Y"] such as the following [Tschenkeli 1960-74]:

(i) tamash- "play"
atelic comitative: PRES v-e-tamasheb-i (passive)"I play with sb"
AOR v-e-tamash-e (pass.), PRESPF m-i-tamashni-a **(active)**
telic comitative: PRES v-e-tamasheb-i (pass.) "I begin to play w/ sb"
AOR ga-v-e-tamash-e (pass.), PRESPF ga-v-s-tamashebi-var **(passive)**

10. The one exception is represented by the opposed Set M prefixes m- and gw-. This was at one time a means of marking exclusive vs inclusive 1st person, traces of which system are attested in early Old Georgian texts [Shanidze 1982:74]. It was reanalyzed as a 1sg/1pl opposition.

11. The one notable exception in the Kartvelian-speaking area is the southwest Georgian dialect group (Gurian and Ach'arian), where both case and number-agreement systems are realigning to mark RS in more direct way [see K'iziria 1974:76-8; Harris 1985:376-80; Tuite 1985].

12. Probably correlated with this lack of morphological prominence is the somewhat less pivotal status of the Georgian RS in the syntactic component as compared to that of Standard European subjects. Most of the syntactic privileges enjoyed by the Georgian RS - initial position in the sentence, reciprocal and reflexive binding, participation in topic chaining and zero anaphora - do not pertain to it exclusively, but only with a higher frequency than for other argument types [Enukidze 1978; Harris 1981; Apridonidze 1986].

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HIERARCHICAL REPRESENTATION OF PHONOLOGICAL FEATURES

K.G. Vijayakrishnan

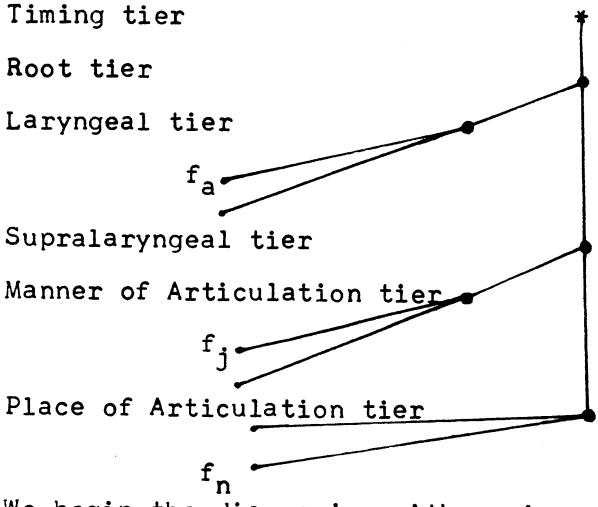
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1. Of late it has been recognised that it is far from satisfactory to consider the 'phoneme' as a bundle of unordered features arranged in a single-column matrix as implied in classical generative phonological theory (i.e. The Sound Pattern of English). With the advent of the autosegmental, three-dimensional model of phonology, it is necessary to conceptualize a well-constrained structure of the 'phoneme'. This paper examines two distinct issues in the three-dimensional model of phonological representation offered in Clements (1985). Firstly, we take up the issue of the relative autonomy of the set of features pertaining to the manner of articulation (in 2) and secondly, the structure that is necessary and sufficient to explain all and only the phonological properties of phonemic systems (in 3).

2. Following Clements, we assume that the phonological representation has an 'internal hierarchical organization' and that features are grouped into fairly independent classes and arrayed hierarchically more or less as in (1).

The class tiers are the Root tier, Laryngeal tier, Supralaryngeal tier, Manner of articulation tier and Place of articulation tier (henceforth R, L, S, M and P respectively) and the phonological features $-f_a \ldots f_n-$ are componential in nature and are grouped under (immediately or otherwise) the Class tiers are illustrated in (1). The specific configuration of the class tiers in (1) is meant to reflect the degree of relative autonomy that obtains among the sets of features (we will question this assumption in 3). Clements (1985), while offering evidence to demonstrate the phonological independence of each of the class tiers, notes that perhaps "the manner tier is superfluous" and "that the so-called manner features could be linked directly to the supralaryngeal node." We present data from Tamil in this section to prove that similar to the features pertaining to the L and P class tiers, the features pertaining to the M class tier do also function as an independent unit.

(1)



We begin the discussion with an inventory of the consonantal sounds of Tamil which concern us here.

(2)

	stops	nasals	liquids
Labial	p/b	m	
Dental	t̪/d̪	n̪	
Alveolar	t	n	l, r
Retroflex	ṭ ḍ	ṇ	ḷ
Palatal	c/j	ñ	
Velar	k/g	ṅ	

Not all the sounds in (2) are phonemic in the literary dialect of Tamil which is the dialect examined and subsequently referred to as Tamil in this paper. The voicing of stops is predictable and hence not phonemic. Among the nasals there need be posited only three phonemes, i.e. m, n and n^1. As for the liquids, apart from the non-controversial l and ḷ, most scholars, influenced by orthography, have claimed that there exist two 'r' sounds in Tamil (cf. Ladefoged (1971) for so-called phonetic evidence). As a native speaker of Tamil, I maintain that Tamil has only one 'r' sound (phone) though surface 'r's have two distinct underlying sources - r and the voiceless alveolar stop t (cf Vijaya-krishnan (1982) and 2 below for justification). Tamil orthography more or less reflects the underlying distinctive sources of the surface 'r'.

We are now ready to look at the process of consonant sandhi (CS henceforth) in Tamil. CS is

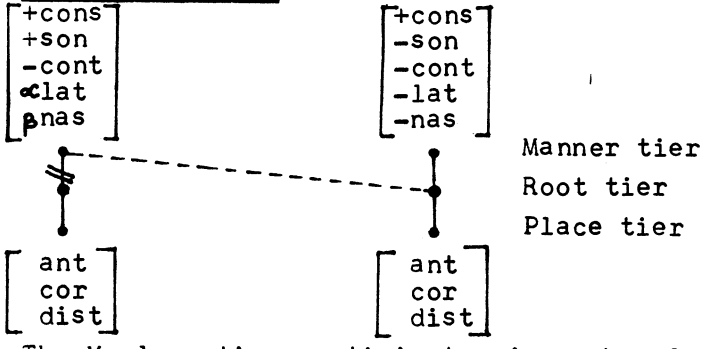
attested widely in compounds. It is also attested in a sub-set of lexical class of verbs when inflected and only sporadically in plural nouns. The compounds in (3) illustrate the process of CS which affects laterals and nasals, changing them to their corresponding stops.

(3)	i	pal	poḍi	patpoḍi
		tooth	powder	
	ii	waal	kuruwi	waatkuruwi
		tail	sparrow	bird of paradise
	iii	mul	ceḍi	mutceḍi
		thorn	plant	
	iv	aaḷ	kaaṭṭi	aaṭkaṭṭi (wiral)
		person	pointer	the index finger
	v	pon	cilambi	potcilambi
		gold	anklet	
	vi	kaṇ	cewi	kaṭcewi
		eye	ear	snake
	vii	maṇ	kalam	maṭkalam
		mud	vessel	

On compounding, the final lateral/nasal segment of the first stem becomes a stop because of the initial stop of the following stem2. CS, then, is a case of regressive assimilation of manner of articulation. Notice that the specification for the place of articulation remains unaffected.

Following Clements' rule formalism along with the notion of feature percolation implied there and assuming that the L class tier for Tamil is not present underlyingly since voicing (and all other related features) is totally predictable (i.e. voicing of stops is rule governed and sonorants are always voiced), we can formulate CS as shown in (4).

(4) Consonant Sandhi



The M class tier participates in a phonological process independently of the P class tier, functioning as an autonomous unit just as the L and P class

tiers do in Clements (1985). Therefore the M class tier is not superfluous. We will present more evidence for the autonomy of the M class tier below.

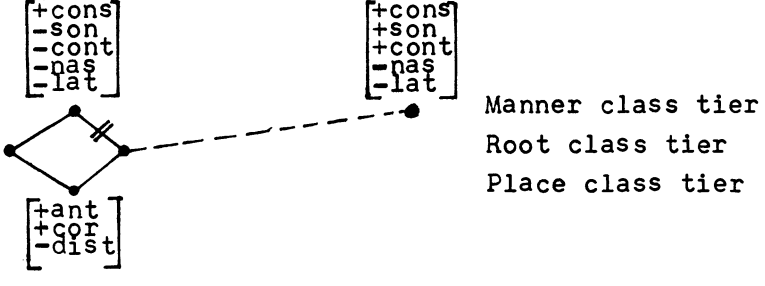
Before we look at another instance of the autonomy of the M class tier, we will briefly describe the phenomenon of progressive assimilation of the place of articulation in consonant sandhi in Tamil, exemplified in words like mul+toradi muttoradi 'flesh hook' and kan+taRal kattaRal 'fire from the eyes (of Shiva)'. That this rule of assimilation of place of articulation in coronal sounds (henceforth CA) is distinct from CS can be proved with data from inflection where CA takes place independently, because of the non-application of CS.

Going back to CS, we will now present further evidence for the autonomy of the M class tier. It would have been noticed that instances of CA cited above involved stems ending in retroflex sounds only. We will now look at stems ending in alveolar sounds. Examine the compounds in (5) where the first stem ends in an alveolar lateral or nasal and the second stem begins with a dental stop.

(5)	i	kal	taccan	*kattaccan	katraccan
		stone	worker		stone carver
	ii	kaḍal	taaRay	*KaḍattaaRay	KaḍatraaRay
		sea	plant		seaweed
	iii	pon	taamaray	*pottaamaray	potraamaray
		gold	lotus		

In (5), the application of CS is evident as the final sonorant of the first stem has become a stop. The application of CA would yield the geminated alveolar stop *-tt; instead of which we find the cluster-tr- in all these cases. The second stop has become a liquid -r- and the specification for the place of articulation remains unchanged. If our analysis of Tamil is well-motivated, we now have another instance of a phonological operation affecting the M class tier to the exclusion of other class tiers-(6) referred to as AD.

(6) Alveolar De-obstruentization (AD)



AD implies that certain surface occurrences of r are derived from t. We will now present some additional evidence to support this point.

(7) a		Root	b		Stem
	i	kaaṭ forest		i	kaaṭṭ
	ii	ooṭ shell		ii	ooṭṭ
	iii	wiiṭ house		iii	wiiṭṭ
	iv	cewiṭ deaf		iv	cewiṭṭ

It is a fact of the language that only the nominative case (in this case Ø) and the vocative case suffix may attach to noun roots (in a). It is the noun stem (in b) which can occur in compounds as well as in inflected forms (with cases other than nominative and vocative). For instance, kaaḍu (nominative) and kaaḍee (vocative) but kaaṭṭay (accusative), kaaṭṭukku (dative), kaaṭṭil (locative) and kaaṭṭumaniḍan (forest man - wild man).

To account for the alternation in (7), a rule of Final Onset Doubling (FOD) could be postulated. But not all final onsets in nouns get doubled as is clear from (8).

(8a)	i	kaat ear	b	i	*kaatt
	ii	milak pepper		ii	*milakk
	iii	marap tradition		iii	*marapp

Consider now nouns which end in r as the final onset.

(9a)	i	cuwar wall	b	i	cuwatr
	ii	coor rice		ii	cootr
	iii	aar river		iii	aatr
	iv	ceer slush		iv	ceetr

If we assume AD to have applied to the forms in (9b), prior to the application of the rule, the cluster -tr- would have been -tt- which can be accounted for by FOD, which in turn would imply that the final segment of the forms in (9a) must be underlyingly t. The derivative (surface) r in (9a) can be accounted for by a simple modification of AD - by making the left branch optional. We assume that FOD applies

only to [+cor, -dist] onsets3.

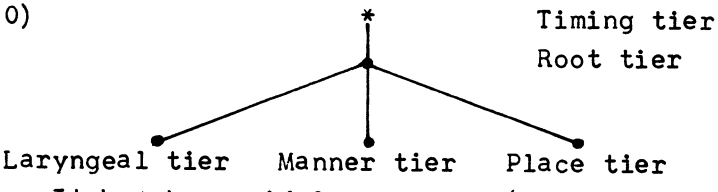
However, if we do not account for the alternation in (9) as indicated above, we will be forced to say that FOD applies only to t and r in the onset (which do not constitute a natural class of sounds) and we would also require rr ~ tr rule in nouns in addition to AD which converts tt ~ tr in compounds!

Going back to the point of contention of this section, (whether t~r or r~t), the phonology of Tamil attests at least two processes whose SC involve the M class tier to the exclusion of the P class tier thereby arguing for the autonomy of the M class tier on a par with the proven autonomy of the L and P class tiers.

3. We had assumed the correctness of the hierarchical structure proposed by Clements (1985) to begin with. The claim made in Clements (1985) regarding this specific hierarchical structure is that "the relative independence of any two features or feature classes is correlated with the number of nodes that separate them". The geometry of the configuration reflects the claim by "postulating the highest degree of independence between the laryngeal features and all others, and the next highest between the manner and place features".

I propose that the hierarchical organization of the three autonomous class tiers is less 'articulate' than Clements' and is represented as a 'flat' structure as in (10) which reflects the claim that all the three class tiers are autonomous to the same extent.

(10)



It has been widely accepted (including Clements (1985)) that the underlying phonological representation is only partially specified and that redundancy rules (which may even be ordered with respect to the phonological rules of the language (cf Archangeli (1985)) fill in the gaps. Moreover, the theory of Markedness may play a crucial role in defining the nature of these redundancy rules (cf Kayne, Lowenstamm and Vergnaud (1985)). It follows that in a particular language an entire class tier may be redundant and therefore unspecified (e.g. the L class tier in Tamil) or a specific feature may have a

predictable value and hence be left unspecified, to be filled in by rules of the type exemplified in (11).

(11) i [U spread glottis] → [-spr.gl.] / [+sup.gl. pr.]

ii [U strident] → [-strident] / [+son]

iii [U round] → [α round] / [α back, -low]

Notice that the redundancy rules which fill in the unmarked value of a feature in (11) mention only feature(s) belonging to the same class tier. Unlike (11), the rules in (12) relate features belonging to different class tiers.

(12) Between L and M class tiers

i. [U voice] → [α voice] / [α son]

ii [U constr.gl.] → [-constr.gl.] / [-son, -cont]

Between M and P class tiers

iii. [U dist] → [+dist] / [-son, -cont]

iv. [U strident] → [-strident] / [-ant, -cor]

Between L class tier and M and P class tiers

v. [U voice] → [+voice] / [-son, -cont, +ant, -cor] i.e. b

vi. [U voice] → [-voice] / [-son, -cont, +back] i.e. k

Between P class tier and L and M class tiers

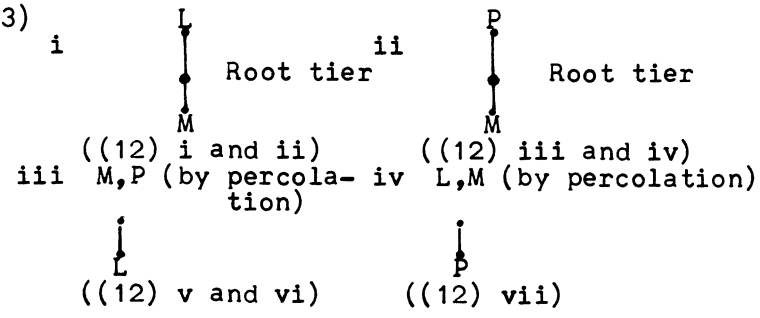
vii. [U anterior] → [-anterior] / [-son, -cont, +constr.gl.]

i.e. p' is the most marked of glottalic stops.

Of the rules in (12), i-vi can be formulated in Clements' model though it would, in principle, not be able to distinguish the type exemplified in i and ii from v and vi where the SD of the former refers to the M class tier alone but the SD of the latter refers to both the M and P class tiers. Finally, it is impossible to formulate (12) vii in Clements' model since there is no node that immediately dominates the L class tier and the M class tier to which the respective features could percolate to the exclusion of the features of the P class tier.

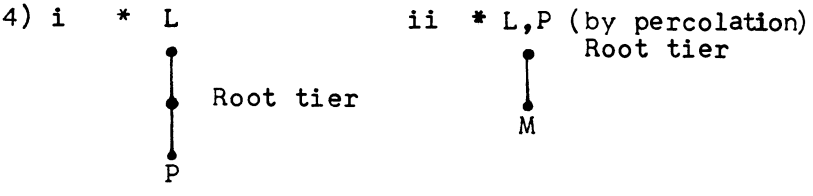
The hierarchical model (10) proposed to replace Clements' model permits us to define all the intra-set relations as (13) illustrates.

(13)



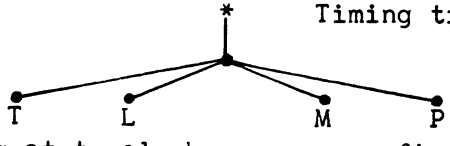
To the best of my knowledge, the logically possible intra-set redundancy relations in addition to those in (12) do not seem to exist.

(14)



We will account for the facts in (14) shortly. We will now look at the Tonal features (presumably H and L) pertaining to the Tonal (T) class tier. It is quite well-established that the tonal features are quite autonomous with respect to other phonological features undergoing processes like spreading, deletion etc. We assume that the T class tier like the L, M and P class tiers is directly linked to the Root class tier.

(15)



Looking at tonal phenomena, we find that laryngeal features like [voice], [constricted glottis], [spread glottis] and [subglottal pressure] may affect tonal features. For instance the loss of voiced aspirates induces a HL tone in Punjabi (cf Eliezer (1984)). This can be formulated as the intra-set relation in (16i). It is reported in Henderson (1982) that the loss of distinctive voicing in nasals and liquids may have given rise to a new tonal distinction in Bwe - a central dialect of Karen. This can be formulated as in (16ii).

(16) i



ii



However, along with (14), the possibilities in (17) seem to be unattested.

(17) i *



ii *



iii *



iv *



v ?



vi ?



The only intra-set relations possible are those involving T and L, L and M, M and P or T on the one hand and L and M on the other and L on the one hand and M and P on the other. We can account for this observation by the constraint on accessibility given below.

(18) Accessibility Constraint

i The class tiers T, L, M and P are ordered with respect to one another (in that order)

ii Rule types may involve sets of features on adjacent class tiers only.

iii. The Structural Description of a phonological operation may allow sets of adjacent class nodes to percolate (selectively) to the root node.

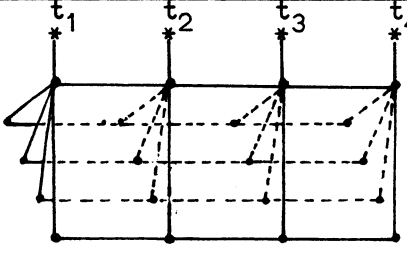
(18i & ii) ensure that rule types (14i) and (17i & ii) are forbidden; (18i & ii) will prevent rule types as in (14ii) and (17iii-v); and finally (18i-iii) will prohibit a rule type as in (17vi).

The question we must now ask is whether (18) is an ad hoc stipulation regarding the structure of phonological representation or whether it is a

consequence of the theory. It can easily be shown that, in fact, the latter is the case.

Granted that phonological representation is three-dimensional, (15) merely represents a cross-section of the three-dimensional structure which would be as in (19).

(19) Three-Dimensional Phonological Representation



Given that the class tiers T, L, M and P are on separate tiers on separate planes, using the analogy of a book where the root tier is the spine and the various planes the pages bound to the spine in a definite order, it is obvious that T, L, M and P would be ordered with respect to one another (18i). Extending the analogy of the book, only information on pages which face one another i.e. on adjacent planes will be accessible at a time. The stipulation in (18iii) is, once again, a consequence of ordering the planes with respect to one another i.e. selective percolation is possible only from adjacent planes.

We have just seen how it is necessary and sufficient to assume an equal degree of autonomy of all the sets of phonological features pertaining to the tonal, laryngeal, manner and place of articulation implied in a minimal structure that links all the sets with the root tier, which in turn, is linked to the timing tier.

However, as far as the member of each set are concerned, there are conflicting claims in the literature e.g. Archangeli (1985) Clements (1985)as in (1) , Kaye, Lowenstamm and Vergnaud (1985) to mention just a few. We would merely like to point out that perhaps not all features which belong to a set have the same status. For instance, nasality among the manner features and coronal for consonant and high, back and advanced tongue root for vowels among place features, as potential 'spreaders', exhibit a greater degree of autonomy and this autonomy must surely get reflected in the hierarchical organization.

Notes

1. These statements do not hold for other dialects of Tamil, for instance, in the Brahmin dialect of Tamil, due to heavy borrowing, voicing of stops is not always predictable and it may be that the palatal nasal could also claim phonemic status.
2. When the second stem begins with a nasal or a vowel or glide - the other possibilities in Tamil - CS does not take place.
3. We assume that the surface non-alternating r in forms like moor 'buttermilk' and teer 'chariot', like other final consonantal sonorants, is an extra-syllabic segment. We assume that moor and coor would be moor and coot respectively underlyingly.

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The Development of Tone in Heiltsuq

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The various ways in which a language may acquire distinctive tone have long been of interest to students of phonological change. In a few cases, tonogenesis clearly is a result of language contact and borrowing (e.g., Li 1986). Most commonly, tone is seen as having arisen from the perturbations of vocalic fundamental frequency caused by adjacent consonants (Matisoff 1973, Hombert 1975). Little attention has been given in the literature to the comparatively rare cases of tone developing from another suprasegmental feature, such as stress or pitch accent. Hombert, for example, in his study of tonogenesis, gives less than a page to the relation of tone and stress, saying that "cases of development from one system to the other are rare" (1975:19).

In this paper I will examine what I believe to be one example of such a development, the introduction of phonemic tone in Heiltsuq, a Wakashan language of northern British Columbia. The presence of tone in Heiltsuq is unique among the members of the Wakashan family[1]; most of the languages display a common, non-phonemic stress system which can be reconstructed in its general outlines for Proto-Wakashan (Wilson 1986). Some speakers of Haisla, a close relative of Heiltsuq, show an alternation between the historical stress system and a restricted pitch-accent (Lincoln and Rath 1980). This alternation will be discussed further in Section 3.

The phonemic status of tone in Heiltsuq and the lack of any accessible source for borrowing tone into the language[2], led Kortlandt (1975) to suggest that tone was present in the proto-language, and was lost in all the other Wakashan languages. However, besides the inherent unlikeliness of the total loss of tone in five of the six members of the family, there are a number of facts that argue against such a theory. All of the Wakashan languages, including Heiltsuq, undergo a number of phonological processes (vowel contraction and loss are the most prominent) that are historically conditioned by stress, pointing to the early status of the Wakashan stress rules. Lincoln and Rath (1980) describe what appears to be a dialect of Heiltsuq, called ?O?owekyala, practically identical to standard Heiltsuq segmentally, but showing the common Wakashan stress system rather than tone. This also points to the early date of the Proto-Wakashan stress.

Additionally, if Heiltsuq tone was the original state of affairs in Wakashan, we should expect some of the normal environments leading to

tonogenesis to show up in the data, but this is not the case. There is no correlation between Heiltsuq tone distribution and surrounding consonants, except for the effect of syllable-final glottal stops discussed below. However, rather than raising pitch, as would be expected based on previous studies (Hombert 1975, Lea 1973), the presence of a glottal stop here lowers pitch. Heiltsuq thus shows none of the most common features associated with spontaneous tonogenesis.

Instead of seeing the situation in Heiltsuq as archaic, I propose to view the tones as a direct development from the older common stress rules. Evidence for such development comes primarily from the parallel effects of certain phonological environments and processes on both stress and tone assignment, as well as a number of cognate sets showing the historical relationship between high tone and stress. A possible mechanism for such a reanalysis of stress as tone can be suggested by the existence of pitch accent as an alternative for stress in Haisla.

1. Background

Before discussing the specifics of Heiltsuq tone, some remarks on general Wakashan phonology will be necessary.

All of the languages in the family are heavily polysynthetic and share a large number of related morphophonemic processes in lexical derivation. These include glottalization, voicing, several patterns of reduplication, some infixation, and a wide variety of root-vowel changes such as lengthening, shortening, insertion, deletion, contraction and umlaut.

All of Wakashan except, significantly, Heiltsuq itself, shows a distinction in vowel length. In the Nootkan branch of the family, this is a long vs. short opposition. In Kwakiutlan, the opposition is full vowels vs. reduced (schwa and a number of phonetically determined variants[3]). Syllable structure can be described as $CV(R)C_0$. Syllable weight is determined by the nucleus only. A heavy syllable contains a branching nucleus (a long vowel, diphthong, or short vowel plus resonant); a light syllable contains a short vowel, the consonants in the coda having no effect on syllable weight. Significantly for this discussion, a glottal stop may occupy the (R) slot in a syllable; in this case, the vowel of the nucleus must be short and the syllable accordingly light. Sonorants can be glottalized by regular morphophonemic processes, having the same vowel shortening effects.

The common Wakashan stress system assigns primary stress to the first heavy syllable of a word, with alternating secondary stress thereafter. This rule has undergone major restructuring in Nootkan, but survives largely intact in Kwakw'ala (see Wilson 1986 for details).

Under such a system, stress assignment will vary due to two common alternations. First, if a stem with the shape CVR- is followed by a consonant-initial suffix, the stem syllable will be heavy because of the branching nucleus -VR-. If such a stem is followed by a vowel-initial suffix,

the resonant will resyllabify as the onset of the second syllable, and the stem will count as light. Thus, stress will shift depending on the shape of the suffix. For example, we find in Kwakw'ala such alternations as:

n'ə́m-sGəm 'one round object' (root counts as heavy)

n'əm-ók 'one person', n'əm-éxsa 'one flat object'
(root counts as light)

Second, if the final resonant is glottalized by the following suffix, the syllable will be light, as discussed above:

gə́l-c'od 'to crawl into (something)'

but: gəl'-nákwəla 'to crawl along (something)'

dzə́m-bətəls 'bury in the ground'

but: dzəm'-stód 'bury at the door'

2. The Situation in Heiltsuq

We turn now to the patterns of tone distribution in Heiltsuq itself. Heiltsuq has two tones, high and low (a mid tone can occur as a phonetic variant of low in certain positions). A maximum of three high-toned syllables can occur in a word, and then only if the last two high tones are on adjacent syllables with the general shape -V.RV-:

p'qá 'to taste' kw'ás 'mussel' cqə́m 'dirty face'

ɬə̀l 'dead' kw'ə̀s 'to sit outside'

hádání 'black cod' lágwùstíwá 'to go up (the mountain)'

The restriction on the occurance of the third high tone can be accounted for if we assume a maximum of two underlying high tones, with a tone spreading rule allowing the continuation of the second tone through a following sonorant onto an adjacent syllable.

Forms such as *p'qa* and *cqəm* exemplify a specifically Heiltsuq process, the loss of schwas in initial syllables before obstruents. This loss causes a restricted violation of the pan-Wakashan syllable canon, which otherwise allows one and only one consonant in the onset. In addition, other schwas not preceding sonorants are strengthened to full vowels (either /a/ or /i/), so that Heiltsuq no longer maintains a vowel length distinction.

It is clear that tone assignment is not predictable from synchronic segmental information, and a number of minimal pairs distinguished only by

tone exist. Consider the pair *kw'ás* and *kw'às* given above. Other examples are the second person singular and the passive infinitive of many verbs, such as

wáta-sú 'you pull' wáta-sú 'to be pulled'

lasá-su 'you plant' lasá-sú 'to be planted'

While synchronic tone patterns cannot be predicted, there is a clear relationship between tonal distribution and stress placement in the other Wakashan languages. High tone in Heiltsuq not surprisingly corresponds to stressed positions in general Wakashan. In the corpus I have been able to examine, Heiltsuq never shows a high tone on a syllable to the right of the common Wakashan primary stress. This is not, however, as tidy as it might appear, since the set of reliable cognates is still quite small, and the loss of schwa in first syllables eliminates a good number of unstressed syllables from consideration for tone assignment.

More significantly, there is a strong parallelism in the effect of syllable weight alternations on Heiltsuq tone and Wakashan stress. Going back to the cases discussed for Kwakw'ala, in the case of CVR- stems, we find the same alternations occuring with consonant- and vowel-initial suffixes:

m'ə́n-sGə̀m 'one round object' (H tone on the root)

m'ə̀n-(ə)xɬ́a 'one dish', m'ə̀n-(ə)xsá 'one flat object' (L tone on root)

In these examples, Heiltsuq has metathesized the sonorants in the root meaning 'one', while retaining glottalization in initial position. Notice that the alternation in tone here perfectly mirrors the change from heavy to light syllable in the older language (though the change is now phonemic).

The schwas in the last two examples are given in parentheses because they are not given by Kortlandt in his description (1975), from which these examples are taken. However, they must be assumed for any underlying description of the suffixes, given their form when attached to the root for the number 'four', *mu- : muwixɬa, muwixsa.* This breaking of /u/ (historically a long vowel in this root) into [uw-] is a common feature in Wakashan, and occurs only before vowels. We can also compare the Kwakw'ala form of this suffix, *-exɬa,* where the vowel is clearly present. Kortlandt's division of the suffix without the vowel masks the regularity of the alternation and leads him to attribute the loss of high tone on the root to morphological conditioning (1975:34).

The same type of alternations can occur with glottalizing suffixes:

gə́l-k'nà 'crawl along a log' but gə̀l'-lə́m 'weasel'

tə́m-kwə̀ 'tap with a stick' but tə̀m'-cə́s 'snare drum'

These parallels also help to explain tone alternations in suffixes which previously had to be described in terms of tone dissimulation. Kortlandt gives a set of suffixes "marked by a tone opposite to that of the stem." One example he gives of this type is the suffix *-(x)ʔə nx,* '...many years, many seasons'. However, if we compare some of the Heiltsuq forms with their Kwakw'ala cognates (from Boas 1947), we can see that the observed patterns are regular given the conditions above:

	Heiltsuq	Kwakw'ala
1 year	m'ə́n-x?ə̀nx	n'ə́m-x?ənx
2 years	mə̀ɬ-?ə́nx	maɬ'-?ə́nx
3 years	yú̀txw-?ə̀nx	yúdxw-?ənx
4 years	mú-xw?ə̀nx	mó-xw?ənx

(The -(x) appearing after vowels and sonorants is typical of a class of "movable consonants" in Wakashan.)

As these data show, the "opposite tone" pattern is in actuality simply one possible result of the stnadard tone alternations based on historical syllable weight. The root for 'one' receives high tone and stress in Heiltsuq and Kwakw'ala respectively because of the following consonant makes the stem syllable heavy. In the root for 'two', the glottalization of the syllable final /ɬ/, seen in Kwakw'ala, guarantees that the first syllable will count as light, and thus be ineligle for stress/tone. The roots for 'three' and 'four', with full vowels, receive stress and high tone normally. Thus, the tone patterns in Heiltsuq in these cases does not require any special conditioning, being a standard reflex of the historical stress rules.

All together then, the evidence demonstrates that the tone pattern of Heiltsuq clearly reflects the older, family wide basic stress system. In cognates, stress and tone appear in identical positions in most cases, and the placment of high tone is sensitive to the same factors affecting stress assignment in the other languages. What remains, then, is to motivate such a development and take the first tentative steps toward suggesting a mechanism for the change.

3. The Development of Phonemic Tone from Stress

Within a standard metrical framework, stress is seen as the phonetic instantiation of rule-assigned phonological prominence to some subset of a phonological domain. Given such a theory, it is clear that the actual feature used to mark prominence is not specifically linked to the metrical

structure; as long as it faithfully indicates relative prominence, it should be free to vary among any of the relevant parameters of suprasegmental features. Thus, a shift from marking "strong" positions with stress to marking the same positions with pitch distinctions would not be a major restructuring of the system. (See Goldsmith in this volume for further discussion along these lines.)

But this is not an explanation for change, merely a restating of oportunities for variation within a workable framework. In order to account for the development of Heiltsuq tone, we will need to find both a clear motivation for picking pitch as the significant marker of prominence, and for the loss of the predictability of tone assignment. The second requirement, I believe, can be explained by the neutralization of vowel length in Heiltsuq. As reduced vowels were lost, the inherited stress rules would become increasingly opaque as their environments could no longer be distinguished. Thus, the old stresses would increasingly be identified with specific lexical forms and morphemes, rather than with a regular assignment rule.

Pinning down the mechanism for the transition from stress to tone is more difficult. Without careful experimental data on the phonetic details of suprasegmental features in Wakashan and reliable reconstructions of the relevant forms (neither currently available), our theorizing at this point must be stated very broadly. However, the existence of pitch-accent as an alternative prosodic system for a least some speakers of Haisla may present a first direction for analysis.

Lincoln and Rath, in their study of Kwakiutlan roots, mention a dialect split in Haisla.[4] While one group maintains the rough outlines of the historical system (stress sometimes accompanied by pharyngealization of the vowel), the other group uses stress only in words given in isolation. In connected discourse, stress is replaced by thes speakers with a HLH pitch pattern on the accented syllable, with the first high apparently appearing only if the accent falls on the second or a later syllable. Haisla stress/pitch, while largely predictable by the standard rules, is not nearly so regular as Nootkan or Kwakw'ala stress. Most of the irregularities appear to be due to paradigmatic leveling with commonly used suffixes.

Since Haisla is both phonologically and geographically the closest of all the Wakashan languages to Heiltsuq, it is interesting that it should also show a shift away from a strict stress feature to a more pitch-oriented and unpredictable system. Most striking is the appearance of pitch accent only in connected discourse. That is, pitch accent arises exactly in the environments where speakers are already manipulating pitch contours in the form of sentence intonation. A first approximation of the change would suggest that some speakers of Haisla have re-analyzed the older stress differences as perturbations of normal sentential intonation patterns; the raising of fundamental frequency regularly a part of the realization of pulmonic stress was identified as the salient marker of phonological prominence within the

intonational domain.

Thus, syllabic stress came to be marked more and more by a regular rise in pitch, or a fall-rise if preceded by another syllable. Heiltsuq may have gone through a similar stage; this would account for the maximum of two high tones in Heiltsuq words, since these tones would be identified with the two peaks in the Haisla pitch contour. In Heiltsuq, however, such a pitch distinction would be lexicalized because of the opacity of the regular rule. The historical alternations based on syllable weight would fossilize, given the pattern seen today.

Kortlandt presents one set of suffixes that appear to show the old relationship between prominence and syllable weight, though in a different way. These suffixes show an alternation between two forms, one containing a diphthong and high tone, the other a single vowel and low tone. This differs from the inherited vowel-length distinction in two ways: both forms show full vowels, which would be counted equally in any Kwakiutlan syllable weighting, and the nature of the vowel appears to be conditioned by the tone rather than the other way around. Thus we have alternations such as:

m'ə̀n-(ə)xɬáwl, màɬ'-àxɬáwl, yút-xwɬáwl, múw-ìxɬùl

'1,2,3,4 glasses or cups'

ú-p'ə̀n-sxɬéys, màɬ-p'ə̀n-sxɬéys, yútxw-p'ə̀n-sxɬéys, mú-p'ə̀n-sxɬ̀is

'1,2,3,4 trips behind the village'

Here the appearance of the low-toned, monophthong form appears to be related to a particular feature of the root *mu-*, 'four', which removes all high tones which follow it. Thus, the alternation in the nucleus of these suffixes may be a survival of the older weight-sensitive system.

Thus, an examination of the regular stress systems found in the various Wakashan languages lead to a re-evaluation of the status of the tone system in Heiltsuq. Rather than being an archaic feature, Heiltsuq tone can clearly be related to the standard prosodic system of Proto-Wakashan, as it shares a number of distinct phonological conditioning environments. The transition from stress to tone, perhaps through a stage of pitch-accent as seen in Haisla, challenges some of the typological statements that would keep such systems apart. The evolution of stress in Wakashan presents a rarely seen case that encourages a re-consideration of some of our assumptions concerning the origins of phonemic tone.

Notes

1. The Wakashan family consists of two main branches: the Kwakiutlan, made up of Kwakw'ala (or Kwakiutl), Haisla, and Heiltsuq (formerly called

Bella Bella); and the Nootkan, made up of Nootka, Nitinat, and Makah. The relationships within each subgroup are quite close, while the two branches themselves are distant. Nootkan has innovated a number of major phonological changes compared to the generally more conservative Kwakiutlan branch. The available data for a number of the languages is sparse, especially for Haisla and Makah.

2. The only language with phonemic tone in the general area where Heiltsuq is spoken is Carrier Athapaskan, but even this is quite distant. There is little resemblance between the tone systems of Carrier and Heiltsuq; Carrier has a three-way tone distinction, largely predictable by surrounding consonants, with syllable-final consonants raising rather than lowering pitch (Pike 1986).

3. Many of the schwas in the Kwakiutlan languages are clearly epenthetic, so much so that a number of scholars have analyzed the language with only full vowels underlyingly (so Sapir and Swadesh; Lincoln and Rath go farther, positing /a/ as the only true vowel in underlying forms, but Boas accepts phonemic schwa). Comparison with Nootkan and ongoing work on the reconstruction of Proto-Wakashan, however, appear to indicate that some Kwakiutlan schwas must go back to real reduced vowels in the earlier language.

4. Actually, given that they appear to be working with only two main informants, we should refer to an idiolect split here. It is unclear how representative of the general speech community these features are, but from the amount of space they give to distinguishing the two styles, one can surmise that this in fact represents a legitimate dialect isogloss.

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PLAIN MORPHOLOGY AND EXPRESSIVE MORPHOLOGY*

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1. Introduction.

Not every regularity in the use of language is a matter of grammar. There are many which incorporate or build upon aspects of grammatical organization (including phonology, morphology, syntax, and semantics), but which can be seen as grammatical rules only by stretching the idea of a grammatical rule beyond all recognition; familiar examples are the regularities of sociolinguistic competence, poetic form, and language games. But in the domain of word formation it has often (and usually tacitly) been assumed that all regularities are to be expressed in rules of (derivational) morphology.

On the basis of this assumption, fundamental conclusions have been drawn about morphology, phonology, and syntax. For instance, it has been claimed by Manaster-Ramer (1983) that English can be shown to be trans-context-free solely on the basis of the deprecative construction (borrowed from Yiddish) seen in locutions like (1a) (with a meaning something like "Who cares about transformations?").

(1) a. transformations shmansformations
b. recursion shmecursion
c. variables shmariables

This pithy way of expressing scorn gives rise, in Manaster-Ramer's opinion, to an infinite sublanguage of English (perhaps just of the English lexicon, but the consequences are the same) in which the strings are of the form ...*X*...*X*..., as in (1) versus (2).

(2) a. *transformations shmariables
b. *recursion shmansformations
c. *variables shmecursion

He apparently assumes that English has a rule of *Shm-* Reduplication forming expressions of the shape in (3b), given base expressions as in (3a).

(3) a. base: $Z = WX$, W a syllable onset
b. derivative: $Z' = WX\ shmX$

He argues that if the base expressions are chosen from any of a class of infinite finite-state languages (the one he uses involves the number names *one point two, one point six five, one point two two four*, etc., but the point could be made with less artificial classes of expressions), then the identity requirement imposed via the rule is beyond the reach of context-free grammar.

It has also been claimed that the possibility of a derivational form (and not merely the choice among its phonological shapes) can be conditional on phonological properties of the base. Thus, Siegel (ms 1971, 1974: 180-1) and Aronoff (1976: 69-70) observe that the insertability of such (mostly obscene) expletives as *bloody*, *blooming*, *frigging*, *fuckin(g)*, *(god)damn*, *motherfuckin(g)*, *pissing*, *sodding*, etc. into a word

depends on the stress pattern of that word. According to Siegel and Aronoff, only base words with a 3...1 stress pattern (tertiary followed, not necessarily immediately, by primary stress) are eligible for expletive infixation, as the examples in (4) versus (5) illustrate (stress-level sequences shown in brackets).

(4) a. Abso-blooming-lutely. [3 0 *X* 1 0]
b. Off we go to Massa-friggin-chusetts. [3 0 *X* 1 0]
c. To hell with Kalama-fuckin-zoo. [3 0 0 *X* 1]

(5) a. *What the hell is the ablative abso-blooming-lute? [1 0 *X* 3]
b. *Off we go to Flori-friggin-da. [1 0 *X* 0]
c. *To hell with Chi-fuckin-cago. [0 *X* 1 0]

Finally, it has been claimed that hierarchical (metrical) phonological representations are required for the statement of morphological rules. McCarthy (1982), on these same infixed expletives, notes first that the (purported) rule of expletive insertion should be stated in terms of syllables rather than segments, in order to describe the contrast between (6) and (7).

(6) fan-fuckin-tastic
(7) *fant-fuckin-astic, *fa-fuckin-ntastic

McCarthy also claims, *contra* Aronoff and Siegel, that *any* following stress will do to license expletive insertion, as in (8), and that a preceding stress in unnecessary, as shown in (9).

(8) every-bloody-body, emanci-motherfuckin-pator [1 *X* 3]
(9) to-bloody-gether, im-fuckin-portant [0 *X* 1 3]

McCarthy states the insertion rule as in (10), crucially referring to the *foot*, a phonological unit larger than the syllable.

(10) Insert expletive before a foot.

Similar data appear to be relevant to the claim that morphological representations must be multi-tier autosegmental constructs, in particular to Marantz's (1982) more specific claim that all reduplication is to be described by autosegmental copying followed by segmental matching. Data from expletive insertion cases may also bear on the claim of Lexical Phonology (Kiparsky 1982) that derivation and inflection can be intermingled with one another.

The formation of words ending in *-eria*, *-teria*, or *-eteria* as cutesy names for retail outlets, which Siegel (1971, 1974) has discussed, is another case of a morphological phenomenon that has been claimed to hold major implications for morphological theory. Siegel notes three forms of the suffix in three different phonological environments in attested forms:

(11) a. *-eria*: basketeria, garmenteria, casketeria, chocolateria
b. *-teria*: candyteria, honeyteria, drygoodsteria, radioteria
c. *-eteria*: caketeria, cleaneteria, luncheteria, healtheteria, smoketeria

The *-eria* variant, clearly, is found with bases ending in /t/, as seen in (11a). After vowels or consonants other than /t/, the *-teria*) version is generally found, as seen in (11b). Siegel's account of where *-eteria* is found is that it occurs with bases that have

final stress. Her examples do not demonstrate this, however, since the forms cited above happen also to be compatible with the hypothesis that *-eteria* occurs if and only if the base is monosyllabic. For what it is worth, Siegel's hypothesis is supported, however, by the following (invented) examples, which seem acceptable to us:

(12) a. ballooneteria, cartooneteria, chandeliereteria, designeteria
b. ?balloonteria, ?cartoonteria, ?chandelierteria, ?designteria

Whichever analysis we assume — whether it is Siegel's stress-sensitive analysis of the affixing condition or one based on monosyllabicity, we seem to have a case showing that allomorph choice can be determined by purely phonological considerations.

The same data imply support for another unusual claim: that inflectional affixes can appear internally in a derived form. The form *drygoodsteria* has the compound *dry goods* inside it, and on the end of *goods* is the plural morpheme. If examples like *Metseteria* or *Raidersteria* (names of imaginary retail outlets dedicated to memorabilia and promotional items associated with the Mets and the Raiders, respectively) are also acceptable, they would constitute further support for internal inflections.

Our purpose in this paper is not to dispute the theoretical claims just reviewed, some of which we believe be true, some false, some merely not proven. Some of the claims have been supported on the basis of other, more straightforward data. For example, although we will suggest below that Manaster-Ramer's argument from *Shm*-Reduplication is suspect (cf. Pullum (1984, 116) on this point), Culy (1985) has since shown that Bambara does indeed have the kind of unbounded reduplication in morphology that leads to non-context-freeness in the overall language. Some other claims listed above seem thoroughly dubious. What we wish to do here is simply to observe that the evidence supporting the claims is suspect in places, given that it depends on treating two things as a uniform phenomenon: *plain morphology*, i.e. the ordinary productive (and nonproductive) word formation and word structure rules of a language, and what we will call *expressive morphology*, examples being processes like expletive infixation, *shm-* reduplication, and word formation with *-(e)teria*. Almost certainly in some cases, we believe, these two are not assimilable under the same heading. We will address the topic of expressive morphology after brief considerations of language games (section 2) and ideophones (section 3).

2. Language games.

Closely allied to the artistic use of language is the playful use of language — in secret languages, riddling, punning, insult games, and the like. Just as the restrictions and deviations of poetic language are extraordinary from the point of view of the grammar of prosaic language, so are the deformations, extensions, and restrictions found in verbal play. Like schemes of poetic form, these constitute an overlay (Zwicky 1986) on the basic linguistic system. And as with poetic forms, there is good reason for their extraordinary character:

> Although the forms that the rules for play languages take are very much like those written by generative phonologists in their descriptions of language (whether synchronic or diachronic), the actual substance or details of the rules are unlike those typically found in ordinary language (again, viewed from either a synchronic or a diachronic perspective). That is, there are no documented cases of ordinary linguistic processes in which the syllables of all or most words are

> reversed or the same sound sequence is prefixed to all or more syllables of words. The explanation for this difference between ordinary linguistic processes and those that occur in play languages cannot be given in purely linguistic terms. Rather it has to do with one of the common social functions of play languages: concealment. Most ordinary phonological rules (e.g. the voicing of intervocalic consonants or the merger of two similar vowels) do not result in a new language so different from the original as to be difficult for native speakers to understand. On the other hand, most play languages are unintelligible to persons who do not know them (even if they are native speakers of the source language). Thus one major linguistic task of a play language is to produce distinct and hard-to-recognize forms by means of one or two relatively simple rules. This is done most efficiently by making use of the rule structure or rule format of ordinary language but at the same time filling in this structure or format with possibilities not exploited in ordinary language. (Sherzer 1976: 31)

There are important lessons to be drawn from Sherzer's discussion. No one could say that play languages are not languages in the sense that linguists use. Full command of a play language based on some natural language implies a full command of the natural language involved. Facts about play languages can clearly be relevant to a broad understanding of the human language capacity. As Yip (1982, 637) observes about play languages (which she calls secret languages):

> Precisely because they provide an unusual insight into the structure of language, their study has a real contribution to make to our understanding of the grammars of languages. In particular, they can offer evidence that bears on the internal structure of the morpheme and syllable, as well as evidence for the types of morphological and phonological processes found in language... Speakers have very strong intuitions about them, as they do about natural languages.

Nonetheless, there is a sense in which play languages are a special class, from which not every kind of data would be judged suitable as the basis for linguistic generalizations. For example, there is a British Pig Latin-like dialect in which *every* lexical syllable onset is followed phonetically by the sequence [eyg], which is then followed by the rest of the underlying syllable. This surely does not imply that insertion of [eyg] after all syllable onsets is a possible phonological rule, or a possible historical change. Although the result of applying this change is a language that can be used to discuss anything that can be discussed in English, and the statement of what the change is has to be stated in terms of phonological units, generalizations about the resulting language (every word contains [g]; [ey] is the only initial vowel nucleus; no words or formatives are phonetically monosyllabic; etc.) are not facts that one would record in a survey of phonological typology; rather, they are facts about a human language game, a kind of oral cipher based on a natural language but not constituting an example of one.

Yip suggests that "secret language rules are more extreme varieties of ordinary phonological or morphological rules." She proposes that for functional reasons natural languages "select the simpler alternatives from the set of possible rules, whereas secret languages, with fewer functional constraints (unintelligibility often being a desirable attribute), make use of the full power of such rules." This view makes the expression of

the formal differences between play (secret) languages and natural languages depend on degrees of extremeness rather than on an absolute distinction. Such a view may be correct, but we do not think that it goes so far as to obliterate the line between play languages and natural languages.

What we wish to draw from this discussion is not any conclusion of the relevance of play language rules to investigations of the general properties of linguistic rule systems, but simply the observation that to some extent evidence from languages invented for play would be misleading data if introduced without caveat into a discussion of natural language structure.

3. Ideophones.

There are expressive word formation phenomena in many languages — namely principles of ideophone creation — that clearly call for a description separate from garden-variety morphology, since they involve special phonetics, phonology, syntax, semantics, and pragmatics as well as exhibiting discontinuities with the morphology of the rest of the vocabulary. According to Johnson (1976, 240),

> Ideophones in the Bantu languages make a class of items comparable to the English word *kerplop* in the sentences below.
>
> [(13)] The stone went "kerplop" into the pool.
> [(14)] The stone fell "kerplop" into the pool.
>
> In English, as in Bantu, verbs and nouns may freely be derived from ideophones, to yield sentences like:
>
> [(15)] The stone kerplopped into the pool.
> [(16)] We heard the kerplop of the stone into the pool.
>
> The current literature on words of this type suggests that they exhibit with remarkable consistency a number of recurrent structural features across a very diverse range of language families... For example, ideophones are frequently introduced by a pause. They describe with vivid clarity and eloquence the perceptual qualities of objects and events. They demonstrate a general antipathy toward negation and question-formation. They are characterized formally by the total absence of inflection and by a freedom in their phonotactic construction not shared by any other class of items in a language. Moreover, there are restrictions on the appropriateness of ideophones in difference social contexts which are peculiar to them and not to any other lexical class. (Johnson 1976: 240)

There are ideophone types in some languages that are very like *shm-* reduplication in English. For instance, in the Mon-Khmer language Pacoh there is a great variety of ideophonic formations involving reduplication of morphological units, among them a set of forms that "consist of two main syllables which differ only in initial consonants. The initial consonant of the second member can be any consonant other than *t-*" (Watson 1966: 15). Examples cited by Watson (16-25) include:

(17) a. tung-bung 'news or smoke spreading quickly'
b. tuj-chuj 'sitting rejectedly'
c. toq-qoq 'big chested but short necked'
d. ter-yer 'standing thin and tall'

Here the formula is (18):

(18) a. base: $Z = CX$, where C is any consonant other than /t/
b. derivative: $Z' = tX\ \ CX$

while in the English playful reduplication the formula is (3) above. The formations differ in two minor respects: (a) in Pacoh the replacive element is *t*, in English *shm*; (b) in Pacoh the altered version precedes the original, while in English it follows.

Ideophones can depart far more strikingly from the typical pattern of phonological and morphological structure for a language. For example, Derbyshire (1979, 190-191) reports that several ideophones in Hixkaryana (a Carib language of Brazil) have variable numbers of syllables on different occasions of use. He cites several, giving in each case an estimated mean number of syllable repetitions (examples in roughly orthographic transcription; *x* = [š]):

(19) a. wih wɨ
'shaking the head'
b. tohutay txetay txetay txeta
'reaching up and picking fruit from a tree'
c. xek xek xek xek
'washing (clothes or body)'
d. sɨk sɨk sɨk sɨk sɨk sɨk
'sharpening (knife on stone), planing'
e. xɨk xɨk xɨk xɨk xɨk xɨk xɨk xɨk xɨk xɨk
'pulling in fishing line'

There surely are no examples of ordinary, non-ideophonic lexical items from natural languages in which the number of syllables is, say, from 5 to 15 with a mean of 10, as in (19e).

From examples like these, we see that playful word formation, like ideophone formation, is not necessarily bound by the constraints that appply in ordinary morphological processes, though these formations may be entirely regular.

4. Expressive morphology.

So far we have pointed to two sorts of special language use, in language games and in ideophone systems. But less obviously special formations can show characteristics that set them off from ordinary morphology, both within their languages and across languages. The phenomenon that we will call expressive morphology, as distinct from plain morphology, is a kind of derivational morphology that has all or most of the special characteristics listed in the following subsections.

4.1. *Pragmatic effect.* Expressive morphology is associated with an expressive, playful, poetic, or simply ostentatious effect of some kind. A clear example is seen in the commercial names in -(*e*)*teria* studied by Siegel. It is not the case that a speaker could, in a serious context of discussion like a business meeting, refer to a specialist retail outlet for laser equipment as a laserteria without raising chuckles. The words formed

by *-(e)teria* suffixation are whimsical coinages, carefully contrived for dubbing commercial enterprises, and carry an effect lacking in plain derivational morphology.

4.2. *Promiscuity with regard to input category.* Rules of plain derivational morphology standardly take a base belonging to some category α and produce a derived word stem of some category β. Thus from the adjective *white* we can form the noun *whiteness*, the verb *whiten*, the adverb *whitely*), and so on. Sometimes, though not so frequently, β may be identical to α; thus from the adjective *white* we can also get the adjective *whitish*, from the (intransitive) verb *whiten* we get the (transitive) verb *whiten*, and so on. The important point is that a rule of derivational morpology will apply to a specific, determinate input category α.

Rules of expressive morphology, in contrast, have variable and peculiar effects on syntactic categories, and (in the cases we have looked at) apply promiscuously to a variety of categories. Indeed, rules for deriving verbs from nouns, nouns from adjectives, or whatever, seem never to be expressive morphology in our terms.

Expletive infixation applies to words of any category whatsoever, and produces items of exactly the same category: *Kalamazoo* is a proper noun, and so is *Kalama-goddam-zoo*; *instantiate* is a transitive verb, and *in-fuckin-stantiate* is a transitive verb.

Shm- Reduplication also applies to words of any category whatsoever, and produces outputs that do not seem to belong to any category at all (see section 4.7).

With *-(e)teria*, a variety of different base categories are again permitted, though some times it is not clear which of two homophonous items the rule has applied to. *Washeteria* seems to be based on a verb, likewise *smoketeria*, whereas many cases involve mapping a noun denoting a commodity into a new noun denoting a retail outlet for that commodity — as with the business in New York called *Caviarteria*. But the output of the rule is always a noun, so the rule seems to be promiscuous in its input but determinate in its output.

We do not have a good enough basis for a theory of this small and heterogeneous class of cases yet, but we note that it does not seem to fit well with the standard theory of derivational morphology.

4.3. *Promiscuity with regard to input basehood.* Rules of plain derivational morphology apply to bases, never (despite occasional appearances) to forms that happen to be inflected (though they can be restricted to applying to particular inflected forms as inputs); inflectional affixes are outside (i.e., farther from the root stem than) derivational affixes. Rules of expressive morphology, in contrast, can apply to (inflected) word forms (*drygoodsteria*) as well as to bases.

Rules of expressive morphology usually apply quite readily to compound constructions (*Madison goddam Avenue*) and even syntactic phrases (*the first goddam time that I saw Paris*; *trip the fucking light fantastic*; *kick the frigging bucket*).

In fact, in this particular case, Zonnefeld (1984) has argued that there is an appropriate comparison between expletive infixation and the custom of constructing names with infixed nicknames, as in *Johnny "Guitar" Watson*, *Nat "King" Cole*, *Eric "Slowhand" Clapton*, *Ray "Boom-boom" Mancini*, etc. While we would not go so far as to agree with Zonnefeld that infixed expletives can simply be regarded "as extended cases of 'middle names'" (p. 56), we think it is arguably true that the phenomenon "is *not a grammatical rule* at all, but rather an extragrammatical phenomenon (p. 55), that it is "a language game rather than a rule of grammar" (p. 59). But at the very least, expletive infixation, with its clear applicability to phrases alongside words and its highly expressive colloquial effect, cannot be regarded as a part of plain morphology, which is all we are concerned with here.

4.4. *Imperfect control.* For most expressive morphological phenomena, there are speakers who have no productive control of them at all, in much the same way that some (otherwise entirely competent) speakers are no good at Pig Latin, inventing knock-knock jokes, punning, or improvised rhyming. McCawley (1978) has verified this empirically, with some results from a class of students who varied considerably in their ability to effectively produce examples of expletive infixing.

4.5. *Alternative outputs.* Many speakers have alternative forms derived from the same source by the same rule (*drygoodseteria* alongside *drygoodsteria*, *Kala-goddam-mazoo* alongside *Kalama-goddam-zoo*). McCawley (1978) and McMillan (1980) provide clear evidence of this.

In plain derivational morphology there is only one output for a given rule applying to a given base. Different rules can apply to the same base, of course (*normalcy* and *normalness* alongside *normality*), the same rule can apply to different but related bases (*grammatize*, *grammaticize*, *?grammaticalize*), and a particular rule can be blocked from applying to a particular base (so that there is no **kindity* alongside *kindness*), but the effect of one rule on one base is determinate. For example, if both *-ish* and *-ful* could be affixed to the base *hope* to produce a form meaning 'more or less hopeful', we would not expect that the *-ish* affixation would have freedom to position the suffix in either of two positions, yielding *hope-ish-ful* and *hope-ful-ish* as synonyms; one or the other would be the output of the word formation rules. The rare cases that apparently violate this in English (in inflectional morphology, for instance, some people vacillate between *court-martials* and *courts-martial*) seem to be due to uncertain learning of compounds that have two possible analyses between which some speakers have remained undecided.

4.6. *Interspeaker variation.* There is considerable variation from speaker to speaker with respect to the conditions eligible sources must satisfy. This is distinct from variation as regards outputs within a single idiolect. Again, McCawley (1978) provides interesting evidence that speakers do not agree on which bases admit expletive infixation. To give one example, McCawley's subjects split between *dis-fuckin-covery* and *dis-fuckin-scovery* when asked to insert *fuckin* into *discovery*. The first form was judged to be completely natural by three subjects, and the second by one subject. But the first was also judged completely *un*natural by one subject, and so was the second by two subjects. Seven reported a degree of awkwardness about the first form and four reported the same about the second. Such data (provided by McCawley for 41 bases) clearly refute the (unsupported) assertions McCarthy has made about expletive infixation:

> Judgements of well-formedness are normally quite robust for individual speakers and remarkably consistent across speakers. All of these facts are incompatible with any sort of true adult learning or with metalinguistic activities like language games. (McCarthy 1981, 223)

4.7. *Special syntax* As is the case with ideophones, the results of expressive word formation often have special syntactic properties. Consider the *shm-* reduplication case. The typical use of an instance of the construction would be something like (20).

(20) Kalamazoo, Shmalamazoo! Let's talk about Detroit; that's a real city.

To the extent that the process can be regarded as forming words at all, it surely does not form syntactically normal words. *Kalamazoo, Shmalamazoo* is presumably a proper noun if it is anything at all, but it does not have the syntax of a proper noun:

(21) a. *Let's not talk about Kalamazoo Shmalamazoo.
b. *Is Kalamazoo Shmalamazoo in Michigan?

There is no parallel that we know of for this in plain morphology. For example, a plain morphological process that forms adjectives from noun bases does not yield a class of adjectives that can only be used in attributive position, or only in two-word exclamations.

5. *Conclusions.*

We claim, then, not that rules accounting for such phenomena are marginal in their grammar, as some analysts have said, but that the definition of the phenomena in question lies in a domain orthogonal to the grammar. They constitute a linguistic phenomenon that is not within the province of the theory of grammar as ordinarily understood, though it is certainly within the broader sphere of human linguistic abilities.

We must stress that we are *not* claiming that such formations lack regularity or that they are not a proper object of study for linguists.[1] As we have said, the study of language games can probably contribute to linguistic theory in more or less indirect ways (cf. Churma (1985, chapter 5) for analysis of some arguments from external evidence in phonology that are based on language games). The same is doubtless true for phenomena of expressive morphology.

It should also be noted that we have not said that the properties listed above will never be found attaching to plain morphology. Conceivably there is a slight expressive effect attaching to some instances of ordinary word formation rules; certainly we do not rule this out. One example of a morphological process that might be seen as having a limited expressive element to it would be diminutive formation with *-ito* in Spanish (see Varela 1986 for some discussion). But for a phenomenon to be classified as expressive morphology, it *must* have a significant number of the above criterial properties, insofar as the relevant questions can be appropriately brought to bear on it.

We do not believe this means that there is simply a continuum from plain to expressive morphology. Occasional intrusions of expressive elements into plain morphology do not nullify the case for viewing the former as a distinct phenomenon, with ostentatious and whimsical linguistic devices like the English *shm-* and *-(e)teria* formations as clear examples.

Although this brief paper cannot be regarded as a thorough study of expressive word formation in natural languages, we hope to have established it as credible that rules of expressive morphology are not subject to the same conditions as rules of plain morphology. Indeed, as remarked above, the fact that they use linguistic resources in ways that grammatical rules do not enables them to stand out, to call attention to themselves — and so to serve their expressive function. As Sherzer observed of the rules governing language games, they succeed by employing grammatical means in ostentatiously nongrammatical ways. Consequently — and this is our modest conclusion — it may be inappropriate to use them as the sole basis for arguments that support revisions to the general theory of grammar.

Notes

* Earlier versions of this paper were presented by Zwicky at the University of Sussex and at the School of Oriental and African Studies, University of London, in 1977, and also at the University of Illinois at Urbana-Champaign in 1979. We express our appreciation to the audience at the Berkeley Linguistics Society meeting for some stimulating and energetic discussion. Preparation of the final version of the paper was partially supported by the Syntax Research Center at the University of California, Santa Cruz. Thanks to Chris Barker for expert research and editorial assistance.

1. On this point, the reader might consult the references in such works as Crystal (1969), Robins (1971), Wescott (1975), and Lyons (1977) to 'allolinguistics' versus 'microlinguistics' within the larger domain of 'macrolinguistics', and also on 'extralinguistics'.

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PARASESSION
ON
GRAMMAR AND COGNITION

Fighting Words: Evidential Particles, Affect and Argument

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We ethnographers, like everyone else, normally meet words in the quotidian contexts of their daily lives, where, at least in principle, we should be able to overcome our idealizations to see the richness, rather than the poverty, of language structure. We find that languages not only permit the expression of, but also *grammaticalize*, aspects of daily life that we have not often been trained to detect. Recently I have been looking at fights, in which people war with each other with words as their weapons. The linguistic facts in verbal battles seem to collapse or conflate referential, expressive, and other rhetorical speech functions. The material has led me to examine the range of linguistic devices which typically carry affective and argumentative load, or which seem peculiarly suited to verbal battles. Here, of course, "linguistic device" must be understood to include everything from emotively charged lexical items to intonation, from anaphora and ellipsis to gestures, and from poetic parallelism to particles. This paper is about evidential particles, especially in Tzotzil and Guugu Yimidhirr argument.

Let me start, though, with English. We often fight with *truth*, and the basic techniques of contentiousness are often inseparable from the same matters that are routinely encoded in the grammatical category of *evidence*: truth, reliability, knowledge, and authority--relative to the context of the speech event. This is, among other things, what irony is all about. Consider the two fragments in (1) and (2), where I have put some notionally evidential elements into boldface.

(1) The Bickersons (an old-time radio show with Frances Langford and Don Ameche):

Blanche; had a miserable time.
it was the UNhappiest anniversary I ever spent.
Why didn't you show up for the party, John?=
John; =I **TOLD** ya
I got stuck at the office.
Blanche; **I'd like to believe that.**
What were you doing?
John; working.
Blanche; **su:re sure.**
That's always the first excuse.

(2) Two sisters (aged 6 and 12) fighting

s; C'mon Maya, STOP it.
m; you nearly BROKE the television=
s; = **yeah** I nearly broke the television.

Since evidentials grammaticalize aspects of the epistemological status of the (putative) propositional substrate of utterances, they are by their very nature useful in arming an argument over matters of fact. But there is usually more than this to evidential particles: they are also *interactive*. Evidentials offer a delicate resource for manipulating a constantly shifting common ground between speaker (in his or her various faces) and interlocutors, a universe of discourse that has not only epistemological but also *moral* character. Evidentials encode not only what a speaker knows or how he knows it; but also what an addressee can be taken to know, or *should* know, or apparently (perhaps culpably) *fails* to know. Again, this

is what irony is often all about. For example, clause initial *yu`van*, in Tzotzil, marks a proposition as ridiculous or untenable, but at the same time presents it as somehow the alleged suggestion of some interlocutor, perhaps the present one. As in (3e)[1], it typically elicits a demurring disclaimer.

```
(3) (discussion of the old days)
a. l; ti  naka to`ox toj  tz-k'el
      ART just then  pine NONP+3E-watch
      "They only used to use pitch pine to see with."
b. j; naka no`ox
      just only
      "That's all."
      [
c. l; li  li  ta   ak'ubaltik
      ART ART PREP night
      "uh..uh.. at night."
d.    yu`van oy    lus   un
      EVID   exist light CL
      "(Do you suppose) they had (electric) light?!"
e. j; ch'abal to`ox
      not     then
      "No they didn't (have light)."
```

Extending the argument, the grammar of evidence picks out, presupposes, or implicates voices or faces (on both the speaker's end and that of his interlocutors): those who do and don't, or can and can't, know. Kuroda (1973) was among the first to point out that grammar can accord special treatment to those events or states, many of them psychological, which at least in Japanese one can only reliably predicate of oneself ('being sad,' for example). Grammatically, only the experiencer of such states (or an imagined omniscient narrator) is entitled to use what Kuroda calls a nonreportive description of such states and events, as in (4a).

```
(4) (Kuroda 1973)
a.   Yamadera no kane o kiite, Mary wa kanasikatta
     "Hearing the bell of the mountain temple, Mary was sad."
     /nonreportive/
b.   Yamadera no kane o kiite, Mary wa kanasigatta.
     "Hearing the bell of the mountain temple, Mary was sad."
     /reportive with gat/
```

By contrast, the *gat* form of (4b), appropriate to an evidentially less secure report of someone *else's* state of mind, "has definite referential force directed toward the 'judger'"(p. 388). That is, the form "points semantically to the existence of a subject of consciousness whose judgment the sentence is understood to represent"(388), and who must be distinguished from the experiencer of the state described. The outsider's lack of *access* to someone else's inner facts is here morphologically encoded, and so, thereby, is his existence as a separate participant indexed by the grammar.

Evidentials can also pick out or implicate those *responsible* for the issue of truth, validity, or evidence in the first place. Consider how the participant structure of a speech event is characteristically brought to the fore when evidentials appear in non-declarative sentences. There is a complicated, although by now familiar,

interaction between evidentials and illocutionary force. The connection between dubitatives and interrogatives, for example, is iconically symbolized by frequently shared morphology (if not by shared meaning, what Wierzbicka [1980] calls the "ignorative"[2]). But there is more to this interaction. Both Warlpiri (Laughren 1981) and Tzotzil have a *hearsay* particle (see [7a] below) which marks the proposition of a *declarative* as originating with, or vouched for by, someone other than the speaker. Notably, the particle also appears in commands and questions, thus nodding obliquely in the direction of otherwise unseen participants.

(5) Warlpiri (Laughren 1981) **nganta** 'affirmation from indirect evidence, hearsay'
a. Marna-lu ma-nta!
   grass-PL get-IMP
   "Pick up the grass!"
b. Marna **nganta**-lu ma-nta.
   "They say you've got to pick up the grass."

(6) Tzotzil **la** 'hearsay'[3]
Mi li`-oxuk **la** k'alal i-0-yal tan-e?
Q here-2plA hearsay when PAST-3A-fall ash-CL
"Were you here when the ashes fell (implicates: somebody else wants to know)?"

As a consequence, by indexing participants, evidentials drag us back again to the arena where we should always have been: to situated speech and its unavoidably social context.

Moreover, insofar as *truth* is something one (sometimes) predicates of propositions, whereas *states of knowledge* are properties of speakers and hearers, evidentials bridge the treacherous and multi-tiered chasm between language and metalanguage--a chasm we should by now find familiar, if no less frightening.

I take as given an inherent *multifunctionality* (Silverstein 1985) to language, so that aspects of language design organized around certain linguistic functions, at certain levels, may systematically feed other uses and purposes, at other levels. A single element (a demonstrative, for example, as part of an utterance) is at once a primary referential device (picking out a referent), a member of a structured semantic domain (patterning both in sense and in syntax with other paradigmatically similar elements), an indexical vehicle (tied inextricably to its moment and place, and at the same time anchoring the utterance in precisely the *right* moment and place), a functionally crucial part of the uttered token of an illocutionary type ("identifying," perhaps, or simply "referring"), and an element in a practical social act (so that its reduced pronominal character, say, will contrast with an alternative way of "doing the same thing"--using a full noun phrase, for example, or a silent gesture, which would lend to the act of reference a different social character).

Particles present the same sort of stratified functional complexity, but in spades. To bring this argument down to earth, let me exhibit some fragments of Tzotzil talk by way of introducing a few more evidentials. The "particles" in question (here I will deal with only half a dozen or so out of an inventory considerably larger) fall into morpho-syntactic categories that suggest some of the relevant complexities of scope and contrast.

There are "second position" clitics (Aissen, in press) which have restricted distribution within a clause, and which are tied in scope to the corresponding

clausal predicate. The syntactic facts (including the precise placement of the particle/clitic) are rather complex here, but on distributional grounds the evidentials can be grouped together[4]. They include most importantly *la* 'they say, so I hear' [the hearsay marker, which we have already met], and *nan* 'perhaps'[5]. (7) shows canonical examples.

(7) a. Mu **la** bu 0-s-ve`.
NEG HEARSAY where 3A-3E-eat.
"He didn't eat it, so it is said."
b. ora **nan** 0-s-botz' lok'el ta `anil
at once perhaps 3A-3E-pull out leaving PREP fast
"He probably pulled it out quickly."

There are also clause-final clitics, which may occur in various combinations. The most notable examples are: *a`a* 'right, of course' (often preceded by *bi* 'indeed'), and *yu`van*, which may also be glossed as 'of course' or perhaps 'nonetheless' (examples in [8]).

(8) a. ja` lik s-ve` ta `ora **a`a**
EMPH arise 3E-eat PREP hour of course
"(That's right) he began to eat immediately."
b. k'ox-on to`ox `un **bi**
small-1A then CL indeed
"I was, indeed, only a child then."
c. k'ox-on **yu`van**
small-1A of course
"I was small, of course!"

The last word, *yu`van*, also occurs in clause-initial position (as we saw in [3d] above), where it means 'Do you suppose?'--but implying 'you would be wrong.' As in (9), it is often paired with the stative second person form of *-na`* 'know,' where it normally seems to beg rhetorically for an interlocutor's self-defensive response.

(9) **yu`van** ch'abal krixchano chk'elvan **ana`oj**
indeed not exist person watch **you know**
"(You don't suppose foolishly that) there are no
people who will stare, (do you?)"

Finally there are evidential sentential particles, such as *yilel* 'it seems [by the look of it]' and *ya`el* 'it seems [by the sound or feel of it].' These are derived from the verbs *il* 'see,' and *a`i* 'hear, feel.' A further evidential phrase, *ta `alel* 'supposedly,' is transparently derived from *al* 'say' and means literally 'in saying, from saying.'

(10) a. k'el-tz'i` **yilel** ch-0-bat
see-dog apparently INC-3A-go
"He went to watch for dogs, it seems."
b.`a taj j-ve`-tik j-moton-tik **ya`el**
CL that 1E-eat-PL 1E-gift-PL it seems
"Well we ate it; it was a gift to us, it seems."

c.Ja` yech nox i-0-`ak'-b-at y-ol **ta** **`alel-e**
EMPH thus only COMP-3A-give-BEN-PASS 3E-child PREP saying.
"She was just given an illegitimate child, supposedly."

The etymology of these expressions suggests their kinship with a phenomenon, noted by various authors[6], linking evidential categories with explicit deictics and perception verbs. The evidential element is *directive*: it points toward the relevant evidence from which inferences may be drawn, and hence draws a contrast with an unmarked proposition (which needs no special evidence). (10a), thus, suggests: "*It looked as if* he was going (to the cornfield) to watch for dogs"--suggesting what sort of appearances were relevant to drawing this conclusion, and thereby priming the hearer with the expectation that things were *not* as they seemed. (He was actually heading for a lover's tryst.)[7]

In the same vein, we discover, in the Tzotzil phrase *ta `alel*, an expression which at last conforms to Jakobson's original characterization (1957) of the evidential category: an indexical relation between the speech event, the narrated event, and a narrated speech event (presumably, when someone told the speaker about the narrated event). The Tzotzil etymology directs attention to precisely such a putative occasion of prior *speaking*[8]. In (10c), the phrasing suggests "She had an illegitimate child, (or so she [or someone] said)."

Evidentials, indeed most particles, are notoriously resistant to uniform analysis, in either propositional (semantic) or illocutionary terms[9]. Since such particles do not pattern neatly into paradigmatic sets, they do not reward structural treatment.

Their syntactic behavior is, as we see in the Tzotzil case, heterogeneous, and it presents daunting complexities of scope. To what, for example, does the doubt of the clitic *nan* attach? When *nan* appears in standard "second position" (following an introductory word or phrase and any temporal clitics) its scope seems to extend to the entire clause (11a); but where it splits an idiomatic phrase (11b) or appears outside of second position its gaze settles, Janus-like, on constituents to either side (see [11c] facing backwards to 'slingshot', and [11d] seemingly facing forwards to 'girl').

(11) probable **nan** scope marked with brackets
a. kuxul to **nan** li j`a`yele
alive still probably ART person
"**Probably** [that fellow is still alive]."
b. te **nan** k'alal mi j-k'elan komel
there probably when if 1E-give away leaving
(*te k'alal* means 'never mind, forget it')
"It **probably** [doesn't matter] if I just give them away."
c. muk' bu x-0-laj ta `uli` **nan** s-bek'
y-at ch-a`i
NEG where AOR-3A-finish PREP slingshot.EVID 3E-seed
3E-penis INC+3E-feel
"He figures that **probably** he hasn't been hit in the balls [with a slingshot]."
d. `an solel **nan** tzeb i-y-ik' a`a yu`van
PART only EVID girl COMP-3E-marry EVID EVID
"Why, **probably** he married [a mere girl], of course, don't you know."

As evidentials are clearly designed for situated interaction, many of their characteristics are often relegated to an intractable pragmatic residuum along with other interpersonal elements in language (honorifics and similar conventional implicatures, diminutives and augmentatives, or other linguistic devices whose psychological tinge--indicating, without really *saying*, how a speaker feels, or where he stands with his fellows--leaves *us* feeling theoretically naked, wet, and miserable). All the same, it is precisely when speakers get down to such ordinary business that the properties of language as a tool begin to appear--that it stops, in Wittgenstein's phrase, "idling[10]."

I will limit myself to one family of uses. Why evidential categories should be primary weapons in a war of words is the particular issue of interest. So let's have a look at some Tzotzil cases, with a few comparative glances elsewhere.

Evidentials, as we have seen, explicitly grammaticalize a relationship between the propositional content of an utterance, and the speaker's knowledge, beliefs, attitudes, and intentions. Where this knowledge and these attitudes are explicitly at issue, then, as in certain sorts of argument over facts, evidentials provide a means of smuggling them in through the grammar, without having to put them, as it were, directly into words. They provide an additional resource for appropriately crafted formulations; note also that the issue may be *expected*, contextually *relevant* knowledge, rather than absolute, abstract knowledge[11]. Robert M. Laughlin(1977:94) describes a venerable Zinacanteco myth-teller whose "accounts are sprinkled throughout with obscenities and ritual words and phrases; the former a sign of his self-assured status in the community, the latter a sign of his pride as a shaman, and an avowal of his intimacy with the gods. Quite deliberately he neglected to add the particle *la* which indicates that a story was only hearsay, for he wants you to know that he was there at the time of the creation."

The ploy also works in reverse, as verbal combatants know (or soon learn). Consider the stratagem of the skilled lay lawyer, mouthpiece for a village political boss, in (12). Called before a *ladino* (non-Indian) authority to explain a blatant abuse of power in which a man who had been called away on a manufactured pretext returned to find his cornfield and fruit trees sacrificed to a new road, this facile spokesman is given a chance to present his boss's defense in Tzotzil to an interpreter. It has already been *established* that the victim had been lured away from the village when his lands were destroyed. The lawyer slyly inserts several *la*s into his account, subtly undermining the plaintiff's credibility.

(12) (argument at damages hearing)

a. ali jun jtatatik le` `une
   ART one father there CL
   "That old gentleman over there."

b. tal sk'ejan (sba) li` ta lisensyaro `une
   come kneel self here at lawyer CL
   "He has come to beg before the officials."

c. yu`un **la** ja` k'ux ta yo`on
   because **CL** EMPH pain in his heart
   "Because he **claims** to feel distress."

d. komo muk' bu tey **la** li volje-e
   since NEG where there **CL** ART yesterday-CL
   "since he **claims** he wasn't there yesterday."

I have already noted that such manipulated epistemological issues often leak into other semantic areas, so that it should not surprise us that evidentials also relate to questions of causation, volition, and agentivity (DeLancey 1985) at the level of the clausal encoding of events.

Still, face-to-face interaction, as the label implies, involves more than one face. Doubt and hearsay may be individually expressed, but with agreement and disagreement it takes two to tango. An important feature of evidential categories, rarely mentioned in the literature on the subject, is their capacity to encode features of what an *interlocutor*, as well as a speaker, knows or is ignorant of. Moreover, such facts are not absolute. The epistemological grounding of a conversation, the presumed body of *shared* information, is, as usual, a collaborative co-production tailored to the purposes and conditions at hand. Since the extent of shared knowledge between interlocutors can vary, it can also be a topic for contention, or for competitive interactional designs.

There are, however, some formal details. In Tzotzil, for example, the evidential enclitics *a`a* and *yu`van* are logically tied to what conversation analysts call "seconds"--turns that follow and are in some sense shaped by preceding turns. Thus, *a`a* means not only 'of course,' or 'indeed' but more: 'I agree with that (and what's more, I already knew it)' or, more contentiously, 'I can tell you that you're right about what you've just said!' In fights, as in other forms of verbal (not to mention academic) exchange, it is often pressing business to establish precedence: rights over and prior claims to information.

Conversely, *yu`van*, which I also glossed as 'indeed,' has a contradictory, disagreeing tone. It means, 'indeed, *despite* what you have said (or implied)' and goes on to suggest 'and you should have known it already!' In some contexts the particle seems to have the force of 'after all,' as in 'despite everything that has gone before, it turns out *after all* that *p*.'

(A comparative digression: in Guugu Yimidhirr, two exclamations, *yuu* and *ngay*, fulfill parallel functions: both respond to an interlocutor's remarks. The first indicates that the speaker was just waiting for the other to come round to a truth or proper formulation that he already possessed ("Yeah! That's right!"). The second suggests, in the context of a question just asked, that the answer is somehow coming out wrong or contrary to the speaker's expectations--a kind of surprised, heckling, back-channel.)

Notably, an utterance with *a`a* or *yu`van* cannot stand alone. The (b) sentences in (13) and (14) would not be well-formed in an isolated first-turn.[12]

(13) (conversation about hybrid corn)
a. puta, `unen k'ox-etik
damn! little small-PL
"Damn, they're just little tiny (kernels)!"
b. k'ox-etik **a`a**
"Yeah, they're small, **all right!"**

(14) (later in the same talk)
a. s-ta-oj kwentail li vojton ch-ak` `uke
3E-get-STAT account ART cob INC+3E-give also
"It gives a sufficiently large cob also (I suppose?)"
ak'-o mi k'ox-etik yilel y-ok
give-IMP Q small-PL it appears 3E-stalk
"even if its stalk appears small"

b. ch-ak' **a`a yu`van**
INC+3E-give **CL CL**
"Of course it does (c.i.: how could you think otherwise!)"

Mary Laughren(1981) notes that the Warlpiri "propositional particle" *kulanganta* suggests the 'negation of a former presupposition.' It similarly orients itself to, and contradicts, something that has been said or suggested before.

(15) -Karlarra-lku **nganta**-lu rdaku-ju pangurnu
west-SEQ PP -3PL hole-DEL dug
-**Ngayi. Kulanganta** yatijarra.
"I've heard they dug the dam out west."
"Really. I thought it was north."

Similarly, in Guugu Yimidhirr, a related Pama-Nyungan language, the utterance final clitics *ba* and *ga,* both glossed again as 'indeed,' contrast precisely on the matter of whether the speaker is agreeing or disagreeing with an interlocutor, not only over what has just been said, as in (16), but sometimes anticipating a reply with the indicated valence.

(16) (talk about a countryman)
-j; yubaal guugu nhanu-um-i yirrgaalgay?
2DuNOM word 2sGEN-CAT-LOC were speaking
"Did you two talk in your language?"
-r; nyulu guugu ngadhun-gal ngadhuu-m-ay yirrgaalgay
nyulu-ugu **ba.**
3sNOM word 1s-ADES 1sgGEN-CAT-LOC
3sNOM-EMPH **indeed**
"He spoke to me in my language, **yes** he **did**!"

(17) (myth about two feuding kinsmen)
-ii, nyulu ngiinggirr nhaadhi gurra
3sNOM snoring saw then
"(for a long time)..he listened for that snoring."
-oh ngiinggirr bulngaalngal **ba**
snoring pulling indeed
"Oh, so he finally **is** snoring!"

(18) (lost countrymen unexpectedly return)
-dhanaan banydyi
3plACC waited
"He waited for them (to come up)."
-a bama yurra **ga,** waarmbaadhi
man 2plNOM indeed returned
"'Ah, **so** it's you all! You came back.'"
-a waarmbaadhi nganhdhaan duday gurra
returned 1plNOM ran then
"'Yes, we have come back. WE ran away (from there)."

We see that *ba* and *ga* can accord with or contradict not only verbal propositions, either stated or anticipated, but also *expectations*: in (17) the confirmed expectation that the adversary will fall asleep, and in (18) the disconfirmed presumption that the others would not return. The sense in which these particles can anticipate or *invite* a

positive or negative response is particularly clear in the stock Guugu Yimidhirr evidential tag questions: *yuu ba* "Isn't that so?"--which fishes for confirmation--and *gaari ga* "No, that's **not** so!"--bracing for further contradiction.

I have suggested that evidentials are potent tools in verbal battle, as well as in ordinary conversation, in part because they help negotiate common ground and the universe of (moral) discourse. We know that some things (such as, say, psychological states in Japanese) are by definition not part of common ground: they are, in the unmarked case, out of bounds for shared or interpersonal scrutiny. In this sense, evidentials help keep the fences in place and in good repair, partitioning the world of who is in a position to know, who has the right to know, who can even *claim* to know *about*, the crucial facts of a situation. This brings me to my last examples, from somewhat closer to home.

In fragment (19), from a deliciously violent argument between two housemates (which ended in their dissolving their agreement to share an apartment), there is a striking use of evidential markers (applied with heavy sarcasm) to fan the flames of argument. Notably, these Spanish speakers turn Japanese psychology on its head: P denies L access to her *own* declared inner states. Note also the explicit metalinguistic tactic, again with an evidential flavor: "I have been very worried about you, and *if you want me to tell you so, I'll tell you so.*"

```
(19)  (roommates squabble in Mexico City)
l;          y me preocupé mucho por tí y
            "and I was very worried about you"
                                          [
p;                                          sí sí sí sí sí
                                          "yeah yeah yeah"
                                             [
l;                                           y si quieres que te =
                                             "and if you want me to"
            =lo diga te lo di:go:
             "tell you so, I'll tell you so"
                      [
p;                    y desde que regresé
                      "and since I have come back"
                        [
l;                      he estado muy preocupada por tí Pilar
                        "I have been very worried about you"
                                                  [
p;                                                sí pero =
                                                  "yeah"
            =preocupadísima mano
             "very worried, friend"
```

Finally, have a look at the whimpering evidentials of a disputed volleyball serve, among a bunch of American academics. In an ambience of constant ironic joking, and self-mocking put-downs, complaints, and criticism, when a *real* disagreement emerges, the players must search for different rhetorical techniques. Here the players take refuge in an increased dose of sincerity ("honestly"), coy evidential framing ("saw it out"), token expressions of affect ("what a pity!), and even explicit evidential meta-commentary ("I believe him"), to preserve their civilized immunity from overt hostilities.

(20) (academics adjudicate a line call in volleyball)[13]

p; that was good
brilliant serve
n; No I **honestly** didn't **think** so
r; I **thought** it was out
n; I **honestly** thought it was out **myself**
what a pity
db; it's your call
c; what'd you think, Robert
b; it's your call
r; I **saw it out,** Carol
p; huh
c; **I believe him**

I have tried to illustrate the multifunctionality of the grammatical expression of certain evidential categories, in the sense that they act on semantic, pragmatic, discursive, and transactional levels simultaneously; more than this, there seems to be a *common* multifunctionality, across both situations and languages. Evidentials not only inject modal and epistemic categories into propositions; they index participants and their states of knowledge, in the context of speech; they permit implicit comment on moral and social interrelationships, and operate as interactive probes and barbs in the minature social system of conversation. The general moral is that ethnographic richness, fidelity, and perspicacity are necessary to linguistic analysis, if we are to take seriously the principle that language is *designed* for social life.

Notes

[1] All original examples, in Tzotzil, Guugu Yimidhirr, Spanish and English, are taken from transcribed conversation.

[2] In Tzotzil, the dubitative clitic *nan* is replaced, in interrogative sentences, by a separate form *van*. The force of doubt is thus transferred to the addressee, so that from a proposition *p* one can form a question *Mi* p *van?* (where *mi* is the question-marker), which means, 'Do you suppose that *p*?'

[3] Brown and Levinson (1978:157) make a similar observation about Tzeltal *lah* which, according to their analysis, is a "hedge" not on propositional content but on illocutionary force.

[4] The "second position" formulation, as in many languages, requires an elaborate statement of what can constitute the "single" preceding constituent. Moreover, some members of this class can also appear elsewhere in a clause. Other "second position" clitics have aspectual/temporal meanings, and ordinarily precede evidentials. Within each semantic class, the members are mutually exclusive, at least in "second position."

[5] Some other infrequent members are *kik* 'I guess, maybe,' *ka`* 'I thought (mistakenly).' *Kik* seems to have a slightly more positive or optimistic tone to it than *nan*, although both sometimes occur together.

[6] See, for example, Silverstein (1978) on the Wasco passive of evidence, which appears to incorporate an explicit deictic *-ix* 'there'; Hanks(1984) describes the evidential nature of ostensive deictics in Yucatec; and Laughren(1981) cites the Warlpiri "propositional particle" *kari* which indicates "supposition from direct evidence." Mithun (this volume) makes related observations about demonstratives in discourse, in a wide range of languages.

Len Talmy, in comments on the oral presentation of this talk, pointed out that Russian *vot*, a presentational form meaning 'This (and here it is)' is difficult to translate because of the situational vividness it conjures; it is usually restricted, even in narrative, to present tense sentences. The phenomenon may be related to deictic (directive evidential) force. Terry Kaufman suggests, in a similar spirit, the English equivalent *lo*.

[7] Compare the evidential flavor (accompanied again by a presentational vividness) in the colloquial English form of words "I saw/see where *p*"--which, as Len Talmy observes, does not easily admit a 2nd person subject (except in questions, as in the case of Japanese psychological predicates), and which seems otherwise pragmatically restricted.

[8] The nature of quoted and reported speech is clearly of related interest. Tzotzil uses the verb *-chi* 'say' to bracket quoted or dramatized dialogue, and the particle-like inflected form *xi* 'he says, one says' interacts with the hearsay clitic *k* in a complicated way.

[9] Nonetheless, there is persistent programmatic optimism in some semantic circles. See Wierzbicka 1976, 1980, and Goddard 1979. I have not attempted to provide semantically uniform and well-motivated formulas for the Tzotzil evidentials described here, despite urgings from Tim Shopen that such an attempt is necessary.

[10] "The confusions which occupy us arise when language is like an engine idling, not when it is doing work"(1958 section 132).

[11] DeLancey (1986) shows that Tibetan evidentials interact with interlocutors' assumptions about expected, predictable, contextually "normalized" background knowledge, a phenomenon which he relates to the "old/new" distinction.

[12] Tzotzil speakers can articulate certain metapragmatic intuitions about these particles; I can remember being criticized and mocked for misusing *a`a*, both in isolated first-turns, and in situations where it was obvious that I could not know enough about the topic at hand to be in a position to agree in the way that the particle required.

In comments after the talk, a psychoanalyst in the audience pointed out his own strategic, pragmatically ill-formed, use of *of course* as a provocative and deliberate prod to patients' framings of absolute certainty on some matter, which could be challenged or cast into doubt by the analyst's covert suggestion that he too was in possession of some of the relevant facts.

Compare the pragmatic misfire involved with the *mis*use of the particle *oh* (typically associated with news receipt, or, in a parallel way, with just remembering something one was going to say) in a turn where deliberate and pre-planned matters are mentioned.

[13] These volleyball transcripts, and some of these thoughts, were collected during my stay at the Center for Advanced Study in the Behavioral Sciences at Stanford in 1985-86. I am grateful for support from the Harry Frank Guggenheim Memorial Foundation and NSF Grant #BNS-8011494. Fieldwork in Zinacantán and Hopevale has been supported by the Australian National University, the Universidad Nacional Autónoma de México, and the Australian Institute of Aboriginal Studies. I thank David French for helpful comments.

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X-Bar Semantics

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I take the major concerns of semantic theory to be (1) the form of the mentally encoded information that we call "concepts," and (2) the principles used in (a) performing inferences on the basis of this information and (b) relating this information to other forms of information used by the human mind, including not only linguistic representations but also visual information (a la Marr (1982)) and other sensory and cognitive faculties. A semantic theory must therefore include at least three formal components:

(1) a set of formation rules that collectively describe in finite form the expressive power of the "language of thought," paralleling, for instance, the set of formation rules (the grammar) that delineate possible syntactic structures in a language;

(2) a set of inference rules that describe in finite form the allowable derivations from one conceptual expression to another (these may includes rules of "invited inference" and "heuristics" as well as logical entailments);

(3) for each other form of information that conceptual information can be related to, a finite set of correspondence rules that define the mapping.

Under such a conception, much of semantic theory is not part of linguistics per se, since the conceptual structures with which the theory is concerned are not language-dependent. (Only the correspondence rule component has specifically to do with language.) I assume, on grounds of evolutionary conservatism, that nonlinguistic organisms--both higher animals and babies--also possess conceptual structures in their mental repertoire, perhaps not as rich as ours, but formally similar in many respects. The difference between us and the beasts is that we evolved a capacity to learn and process syntactic and phonological structures and the mappings from them to conceptual structures and to the auditory and motor peripheries. These mappings permit us a relatively overt realization of conceptual structure unavailable to other organisms.

However, this does not mean that linguists should not be concerned with semantic theory. Language provides the

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best evidence we have for the constitution of conceptual structure, and linguistic methods are clearly applicable to the problem. If nonlinguistic evidence arises as well, say from the theory of vision, it should be welcomed as well. That is, semantic theory is the meeting ground of linguistics and other branches of psychology. (See Jackendoff 1987a,b for further discussion of this point and some concrete connections to visual theory.)

What do I mean by X-Bar Semantics? The term is obviously chosen in allusion to X-Bar Syntax, the aspect of the Extended Standard Theory and its descendants that concerns the nature of syntactic categories. Chomsky's original paper on the topic, "Remarks on Nominalization" (1970), was written in reaction to a series of arguments (e.g. Postal 1966, Ross 1969, Lakoff 1971) that since two syntactic categories (say Adj and V) share certain properties, one must be transformationally derived from the other. Chomsky argued that it is impossible to state a transformational derivation of any generality, and that the sharing of properties should instead be expressed by decomposing syntactic categories into a feature system--just as properties shared among phonological segments of a language are expressed in terms of distinctive features. While this program of research has not proven totally successful as a formal move, the points of similarity among syntactic categories that form the underpinnings of X-Bar theory are undeniable. Here are some of the major aspects of the theory:

(a) The category of a syntactic phrase is determined by the lexical category of its head (with marked exceptions such as gerundives).

(b) All major lexical categories (N, V, A, P) can subcategorize complements and impose selectional restrictions on them; the complements can range over most of the major phrasal categories.

(c) All phrasal categories permit, in addition to subcategorized arguments, other kinds of modification, in particular restrictive modifiers and appositives.

(d) Some categories (V and N in English) can support subjects, and others cannot.

(e) Some categories (V and P in English) can support direct objects (or, in some theories, case-marking), and others cannot.

In Semantics and Cognition (Jackendoff 1983) I proposed that much the same basic organization applies to major conceptual categories. Instead of a division of formal categories into such entities as constants, variables, predicates, and quantifiers, each of which has

nothing in common with the others, I argued that the major units of conceptual structure are conceptual constituents, each of which belongs to one of a small set of major categories such as Thing, Event, State, Place, Path, Property, and Amount. These are obviously all quite different in what kind of reference they pick out, but formally (algebraically) they have a great deal in common:

(a) Each contentful major syntactic constituent of a sentence (this excludes epenthetic it and there) maps into a conceptual constituent in the meaning of the sentence. For example, in John ran toward the house, John and the house correspond to Thing-constituents, the PP toward the house corresponds to a Path-constituent, and the entire sentence corresponds to an Event-constituent. (However, the converse of (a) is not the case: not every conceptual constituent in the meaning of a sentence corresponds to a syntactic constituent.)

(b) Each conceptual category supports the encoding of units not only on the basis of linguistic input, but also from the visual (or other sensory) environment. For example, **That** is a robin points out a Thing in the environment; **There** is your hat points out a Place; Can you do **this**? accompanies the demonstration of an Action; The fish was **this** long accompanies the demonstration of a Distance, independent of the object whose length it is.

(c) Many of the categories support a type-token distinction. For example, just as there are many individual tokens of the Thing-type expressed by a hat, there may be many tokens of the Event-type expressed by John ate his hat, and there may be many different individual Places of the Place-type expressed by over your head. (Properties and Amounts, however, do not so clearly differentiate tokens and types.)

(d) Many of the categories support quantification. With Things: Every dinosaur had a brain. With Actions: Everything you can do, I can do better. With Places: Anyplace you can go, I can go too.

(e) Each conceptual category has some realizations in which it is decomposed into a function-argument structure; each argument is in turn a conceptual constituent of some major category. The standard notion of "predicate" is a special case of this, where the matrix category is a State or Event, as in John is tall (arguments are John (Thing) and tall (Property)), John loves Mary (arguments are both Things), and John tried to leave (arguments are John (Thing) and <PRO> to leave (Event or Action)). But a Thing also may have such a decomposition, as in father of the bride or president of the LSA; a Path may have a Thing

as argument, as in to the house, or a Place, as in from under the table; a Property like afraid of Harry has a Thing as argument.

(f) The conceptual structure of a lexical item is an entity with zero or more open argument places. The meanings of the syntactic complements of the lexical item fill in the values of the item's argument places in the meaning of the sentence. So, in the examples above, be is a State-function whose arguments are found in the subject and predicate adjective positions; love is a State-function whose arguments are found in subject and object position; try is an Event-function whose arguments are the subject and the complement clause; father and president are Thing-functions whose arguments are in the NP complement; from is a Path-function whose argument is a complement PP or NP; afraid is a Property-function whose argument is the complement NP.

These observations, though slightly tedious, should convey the general notion behind X-Bar Semantics: none of the major conceptual categories can be insightfully reduced to the others, but they share important formal properties. Thus, parallel to the basic formation rules of X-Bar Syntax in (1), we might propose the basic formation rule for conceptual categories in (2).

(1) XP --> Spec - X'
X' --> X - Comp
X --> [±N, +V]

(2) Entity --> [Event/Thing/Place/...
Token/Type
F (<Entity$_1$, <Entity$_2$, <Entity$_3$>>>)]

In addition, observation (a) above can be formalized as a general correspondence rule of the form (3), and observation (f) can be formalized as a general correspondence rule of the form (4).

(3) XP corresponds to Entity

(4) [X° <YP <ZP>>] corresponds to [Entity F (<E$_i$>, <E$_j$, <E$_k$>>)]
where YP corresponds to E$_j$, ZP corresponds to E$_k$, and the subject (if there is one) corresponds to E$_i$.

The examples in (a)-(f) above show that the values of ±N, ±V, and the conceptual n-ary feature Thing/Event/Place...

are irrelevant to the general form of these rules. The algebra of conceptual structure and its relation to syntax is best stated cross-categorially.

These phenomena, explored in more detail in Semantics and Cognition, chapters 3, 4, and 9, concern areas where the syntactic category system and the conceptual category system match up fairly well. In a way, the relation between the two systems serves as a partial explication of the X-Bar properties of syntax: syntax presumably evolved as a means to express conceptual structure, so it is natural to expect that some of the structural properties of concepts would be mirrored in the organization of syntax.

On the other hand, there are other aspects of conceptual structure that display a strong X-Bar character but which are not expressed in so regular a fashion in syntax (at least in English). One such aspect has been discussed steadily but not centrally in the literature over the last 20 years. The best known line of descent in these investigations starts with Vendler 1967 and continues through such works as Verkuyl 1972, Dowty 1979, Hinrichs 1985, and Bach 1986; other independent lines that have come to my attention but not to that of the "main line" include Talmy 1978, Platzack 1979, and Declerck 1979. A representative range of facts appears in (5).

(5) {For hours, / Until noon,}

a. Bill slept.
b. The light flashed. [repetition only]
c. Lights flashed.
d. *Bill ate the hot dog.
e. Bill ate hot dogs.
f. *Bill ate some hot dogs.
g. Bill was eating the hot dog.
h. ?Bill ran into the house. [repetition only]
i. People ran into the house.
j. ?Some people ran into the house. [repetition only]
k. Bill ran toward the house.
l. Bill ran into houses.
m. Bill ran into some houses. [repetition only]
n. Bill ran down the road.
o. *Bill ran 5 miles down the road.
[ok only on reading where 5 miles down the road is where Bill was, not where 5 miles down the road is how far he got.]

The question raised by these examples is why prefixing for hours or until noon should have such effects on such a disparate range of examples. The essential insight is that for hours places a measure on an otherwise temporally unbounded process, and that until noon places a temporal boundary on an otherwise temporally unbounded process. Bill slept is such a process, so it can be prefixed with these expressions. On the other hand, Bill ate the hot dog is a temporally bounded event, so it cannot be further measured or bounded.

There are two ways in which a sentence can be interpreted as a temporally unbounded process. One is for the sentence to directly express a temporally unbounded process, as is the case in (5a, c, e, g, i, k, l, n). We will return to these cases shortly. The other is for the sentence to be interpreted as an indefinite repetition of an inherently bounded process, as in (5b, h, j, m). (Bill ate the hot dog, like Bill died, is bounded but unrepeatable, so it cannot be interpreted in this fashion.) This sense of repetition has no syntactic reflex in English, though some languages have an iterative aspect that does express it.

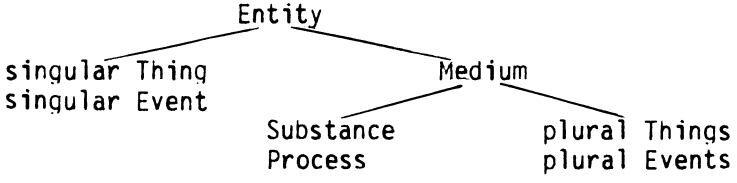
How should this sense of iteration be encoded in conceptual structure? It would appear most natural to conceive of it as an operator that maps a single event into a repeated sequence of individual events of the same type. Brief consideration suggests that in fact this operator has exactly the same semantic value as the plural marker, which maps individual Things into collections of Things of the same type. That is, this operator is not formulated specifically in terms of Events, but should be applicable in X-Bar fashion to any conceptual entity that admits of individuation. The fact that this operator does not receive consistent expression across syntactic categories should not obscure the essential semantic generalization. However, it is a place in the grammar (at least in most languages) where the syntax and semantics are not parallel in structure.

Returning to the inherently unbounded cases, it has often been observed that the bounded/unbounded (event/process, telic/atelic) distinction is strongly parallel to the count/mass distinction in NPs. For instance, a part of an apple (count) cannot not itself be described as an apple, and a part of John ate the sandwich (event) cannot itself be described as John ate the sandwich. By contrast, any part of a body of water (mass) can itself be described as water (unless the part gets too small with respect to its molecular structure); any part

of John ran toward the house can itself be described as John ran toward the house (unless the part gets smaller than a single stride). These similarities suggest that conceptual structure should encode this distinction cross-categorially too, so that the relevant inference rules do not care whether they are dealing with Things vs. Substances or Events vs. Processes.

It has also been often observed that plurals behave in many respects like mass nouns, and that repeated events behave like processes. (Talmy suggests the term "medium" to encompass them both.) The difference is only that in plural nouns and repeated events the "grain size" is fixed by the singular individuals making up the unbounded medium, so that decomposition of the medium into parts is not as arbitrary. Thus the structure of the desired feature system is organized as in (6).

(6)



That is, the features that distinguish Things from Events are orthogonal to the features differentiating individuals from media, and within media, homogeneous media from aggregates of individuals.

The examples in (5) also demonstrate that Paths participate in the system shown in (6). For instance, to the house is a bounded Path; toward the house and down the road are unbounded Paths, any part of which can also be described as toward the house or down the road, and into houses describes multiple bounded Paths, one per house.

What factors are involved in determining whether a sentence expresses an Event or a Process? The examples in (5) illustrate a wider range of such factors than are generally cited in any single piece of work in the literature I am familiar with. These factors include the following:

(a) choice of verb (5a vs. 5b)
(b) choice of aspect (5d vs. 5g)
(c) choice of singular or bare plural in the subject (5h vs. 5i), in the object (5d vs. 5e), and in object of a preposition (5h vs. 5l)
(d) choice of determiner in the subject (5i vs. 5j), in the object (5e vs. 5f), and in the object of a preposition (5l vs. 5m)
(e) choice of preposition (5h vs. 5k)
(f) choice of prepositional specifier (5m vs. 5n)

How all these factors enter into the choice of boundedness or unboundedness for a sentence is not altogether clear. The general shape of the solution would seem to take the form of an algebraic system that combines the values of the features for any conceptual function and its arguments to derive a value for the entity as a whole. This system, operating recursively up through the conceptual embeddings, will eventually take into account the values for each of the parts of the sentence. (Many of the authors cited above propose fragments of such a system, but none develops it in the full generality required by the range of examples in (5).) It is tempting to speculate that such a system is at the root of a deeper account of the scope of quantification--an explanation of why an operator on a single NP in a sentence can extend its effects over the entire sentence.

To sum up the discussion of (5): these examples show that (a) there is a common feature system that deals with boundedness and individuation, cutting across Things, Events, and Paths; (b) the system is expressed by a heterogeneous collection of syntactic factors, including lexical choice, aspect, determiner, and perhaps case (e.g. the use of partitive in some languages to express unboundedness); (c) there is a set of algebraic principles over conceptual structure that correlates the values of the features in all parts of the sentence with the features of the sentence as a whole.

Here is an example that illustrates some of the explanatory power achieved through such a system: the meaning of the word end. For a first approximation, an end is a zero-dimensional boundary of an entity conceived of as 1-dimensional. So, for the simplest case, the end of a line is a point. A beam is conceived of (as in Marr (1982)) as a long axis elaborated by a cross-section. The end of a beam is a point bounding the long axis, elaborated by the same cross-section; this makes it 2-dimensional. A table can be said to have an end just in case it can be seen as having a long axis (e.g. it is rectangular or oval but not square or circular); the end is then just the boundary of the long axis elaborated by the short axis. However, in standard X-Bar fashion, we can speak of the end of a week (a point bounding a 1-dimensional period of time) and the end of a talk (a zero-dimensional State bounding an Event that extends over time).

However, there is an apparent difficulty in this account of end. If the end of a talk is a point in time, how can one felicitously say, "I am now doing the end of

my talk," or "I am now finishing my talk"? The progressive implies the existence of a process taking place over time, and therefore seems to attribute a temporal extent to the end.

An answer is provided by looking at the Thing system. Consider what is meant by Bill cut off the end of the ribbon. Bill cannot have cut off the geometrical boundary of the ribbon. Rather, the sense of this sentence shows that the notion of end permits an optional elaboration: the end may consists of a part of the object it bounds, extending from the actual boundary into the object some small distance epsilon.

There are other boundary words that obligatorily include this sort of elaboration. For instance, a crust is a 2-dimensional boundary of a 3-dimensional volume, elaborated by extending it some distance epsilon into the volume. Border carries a stronger implication of such elaboration than does edge: consider that the border of the rug is liable to include a pattern in the body of the rug, while the edge of the rug is more liable to include only the binding.

The claim, then, is that end includes such an elaboration as an optional part of its meaning. Going back to the case of Events, I can therefore felicitously say "I am doing the end of my talk" or "I am finishing my talk" if I am within the region that extends backward the permissible distance epsilon from the actual cessation of speech. In other words, the featural machinery of dimensionality and boundaries, with which we characterize Things and the regions of space they occupy, extends over to Events as well. That's why the word end is so natural in either context. The main difference in the systems is that Things have a maximum dimensionality of 3, while Events have a maximum dimensionality of only 1, so that certain distinctions in the Thing system are leveled out or unavailable in the Event system. Only in a theory of conceptual structure that permits this sort of cross-categorial generalization can even the existence of a word like end be explained, much less the peculiarities of its use in so many different contexts.

A general conclusion seems to emerge from the considerations I have raised here. It is legion among people studying semantics that the natural categories we speak of, such as horses and chairs and cups and games and running and believing, are full of complex phenomena, possibly invoking fuzzy categories and/or stereotypes and/or other formally intimidating notions. However, the present discussion has suggested that beneath this surface

welter is a highly abstract formal algebraic system that lays out the major parameters of thought. The distinctions in this system, by contrast with the factors that distinguish categories within the major parameters, are not at all fuzzy or nondiscrete. Nor are they based on experience: rather, they are the machinery the human mind has to channel the ways in which all experience can be mentally encoded.

Some aspects of this system are reflected rather directly in the grammar of natural language, but others are much less so. Moreover, the primitives of this system, like phonological features, do not appear in isolation as individual morphemes such as cause or do. Rather, they are more like the quarks of particle physics: they can only be observed in combination, and their existence must be inferred from their effects on the language as a whole. This does not impugn their status as discrete elements forming strict families of distinctions. However, it makes it more difficult to discover the underpinnings of semantic structure without first attaining a fairly thorough understanding of the grammar of natural language.

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Sentence focus, information structure, and the thetic-categorical distinction.

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1. Introduction.

In this paper, I would like to address the grammatical problem posed by such contrasting sentence pairs as illustrated in examples (1) and (2). In each of the English, Italian, French, and Japanese sentence pairs, one and the same propositional content is expressed by two different intonational and/or morpho-syntactic structures. The questions preceding the examples minimally suggest two types of discourse contexts in which the sentences may be uttered appropriately. Small caps indicate the *focus* of each sentence, which, in English at least, coincides with the main point of prosodic prominence. The notion of focus will be discussed in section 3.[1]

(1)	A. What's the matter?	B. How's your neck?
	a. My NECK hurts.	a. My neck HURTS.
	b. Mi fa male il COLLO.	b. Il collo mi fa MALE
	c. J'ai le COU qui me fait MAL.	c. Mon cou il me fait MAL.
	d. KUBI ga itai.	d. Kubi wa ITAI.
(2)	A. What happened?	B. What happened to your car?
	a. My CAR broke down.	a. My car broke DOWN.
	b. Mi si è rotta la MACCHINA.	b. La macchina si è ROTTA.
	c. J'ai ma VOITURE qui est en PANNE.	c. Ma voiture elle est en PANNE.
	d. KURUMA ga koshoo-shi-ta.	d. Kuruma wa KOSHOO-SHI-TA.

Notice that the examples on the left hand side of (1) and (2) are *not* to be construed as answering the questions "What hurts?" and "What broke down?", i.e. they are not to be interpreted as having the narrow focus (or "contrastive" or "exhaustive listing") reading in which the open propositions 'X hurts' and 'X broke down' are pragmatically presupposed. The reader is asked to ignore possible narrow focus readings throughout the paper.[2]

The relevant grammatical contrasts between the left hand examples and the right hand examples all have to do with the way the *subject* NP is grammatically marked in these sentences. They may be characterized as follows: (i) accented vs. non-accented subject NP in English, (ii) preverbal vs. postverbal subject NP in Italian, (iii) clefted vs. detached NP in French; and (iv) *ga*-marked vs. *wa*-marked NP in Japanese.[3] The four grammatical structures illustrated in the left hand examples represent four major structural types which are attested in various languages (cf. in particular Sasse, ms.). Thus subject accentuation without concomitant syntactic change is found e.g. in German (which also has type (ii)); postverbal subject position is found e.g. in Romance, Slavic, and Chinese; cleft structures are found e.g. in Welsh and Arabic; and special morphological marking exists e.g. in Bantu (cf. Givón 1975). As for the choice of the four languages in (1) and (2) and in the rest of this paper, it is dictated solely by personal preference. In section 3, I will suggest an analysis according to which the various grammatical structures in the left hand examples are motivated by one and the same fundamental grammatical function: the marking of a lexical subject NP as a *non-topic*, i.e. as a constituent which is in the scope of the assertion expressed by the sentence.

There is no established terminology concerning the sentence type represented by the left hand side examples. Some of the labels applied to such sentences are 'presentational sentences' (Bolinger and others), 'neutral descriptions' (Kuno 1972), 'news sentences' (Schmerling 1976), 'event-reporting sentences' (Lambrecht 1986 and

forthcoming). For reasons which will become apparent later on, I will call the examples on the left *sentence focus* structures (SF structures) and those on the right *predicate focus* structures (PF structures).

Concerning the predicate focus (PF) structures in (1) and (2), it goes without saying that under the minimal context provided there, these structures would normally not contain full lexical subjects. Thus given the contexts in (1) and (2), the answers in (3) containing pronominal or null subjects would certainly be preferrable to the PF structures containing lexical subjects:

(3) a. It HURTS. — It broke DOWN.
b. Mi fa MALE. — Si è ROTTA.
c. Il me fait MAL. — Elle est en PANNE.
d. ITAL. — KOSHO-SHI-TA.

Nevertheless unaccented subject NPs are pragmatically *possible* in PF structures. They may therefore be used here to illustrate the contrast with the SF structures. Notice that the lexical subjects in the PF structures may also carry a (varying) degree of prosodic prominence, in addition to the focus prominence on an element of the predicate. I will argue below that this type of varying prominence is functionally to be distinguished from the focus prominence indicated by small caps.

2. Information structure and the thetic-categorical hypothesis.

One of the first linguists to have recognized the relevance of the grammatical contrast under discussion was Mathesius (1929), the founder of the Prague school of Functional Sentence Perspective. In post-war linguistics, the discussion has been pursued by numerous European and American scholars, all of whom were more or less directly influenced by the Prague school: Bolinger (1954 etc.) on English and Spanish; Hatcher (1956) and Contreras (1976) on Spanish; Firbas (1966), Halliday (1967), Chafe (1974), Schmerling (1976) on English; Kuno (1972) on English and Japanese; Wandruszka (1982) on Italian; and Wehr (1984) on Romance. In spite of many individual differences, the analyses presented by these scholars share the basic premise that the contrast between SF structures and PF structures has to do with what is generally (and misleadingly) referred to as the contrast between "old information" and "new information" (involving such factors as contextual boundedness, theme-rheme or topic-comment structure, the marking of presupposition and assertion, the state of referents in the minds of the speech participants, etc.). For example the presence of focal prominence on the subject NPs in the English SF structures and the (relative) lack of prominence on the subjects in the PF structures is sometimes explained by saying that the referent of the subject NP is "new" (and therefore accented) in the SF structure, but "old" (and therefore relatively unaccented) in the PF structure or, to use a terminology recently suggested by Chafe (1987), that it is is 'discourse-inactive' in A but 'discourse-active' in B.[4] I will refer to this general approach to our contrast as the *information structure approach.*

Another approach to the grammatical contrast between SF structures and PF structures, much less prominent in American linguistics, is the approach inspired by the philosophical debate concerning the difference between 'thetic' sentences and 'categorical' sentences. According to this approach, the contrast expressed in our examples is seen as evidence for the existene of two different sentence *types* which are the manifestations of two different *cognitive representations* of the same propositional content. This approach is represented in work by Kuroda (1972, 1984, 1985), it is hinted at in Dahl (1974) and Vattuone (1975), and it has recently been taken up in work by the German scholars Ulrich (1985) and Sasse (1984 and ms). I will refer to this approach as the *thetic-*

categorical approach. The proponents of the thetic-categorical approach claim that SF structures represent a category of its own, which cannot be analyzed by appealing to principles of information structure. In what follows, I will summarize some of the claims made within the thetic-categorical framework and describe the difference between it and the information structure approach. I will then sketch a third approach which, I think, can bridge the gap between the other two by offering a revised definition of some of the theoretical concepts of information structure and by presenting a new account of some well-known problematic examples.

The distinction between thetic and categorical sentences was first proposed by the 19th century philosopher Brentano and further developed by Brentano's disciple Marty as a fundamental cognitive distinction between two types of human *judgment.* Reacting against the generally accepted Aristotelian view that all human judgment is categorical in nature, i.e. consists in predicating (or denying) some property of some entity, Brentano and Marty claimed that sentences can express two distinct types of judgment. The *categorical* judgment, which is expressed in the traditional *subject-predicate* sentence type, involves both the act of recognition of a subject and the act of affirming or denying what is expressed by the predicate about the subject. Since it involves these two independent cognitive acts, it is called a "double judgment" (*Doppelurteil*) by Marty (1918, passim). The basic logical structure of the categorical judgment can be represented as 'A is B' or 'A is not B'. As illustrations of sentences expressing categorical judgments Marty cites such examples as the following:

(4) a. Diese Blume ist blau. 'This flower is blue'
b. Ich bin wohl. 'I am (feeling) well'
c. Mein Bruder ist abgereist. 'My brother left on a trip'

In contrast, the *thetic* judgment involves only the recognition or rejection of some judgment material, without predicating this judgment of some independently recognized subject. Its basic logical structure is "A is" or "A is not". It is therefore also called a "simple judgment" (*einfaches Urteil*). The following German and Latin sentences are typical examples of thetic judgments according to Marty. I have grouped them into two sets, according to semantic and formal criteria which I will make explicit below.

(5) a. Es regnet. / Pluit. 'It is raining'

b. Gott ist. 'God exists '
Es gibt gelbe Blumen. 'There are yellow flowers'
Es findet ein Markt statt. 'A market is being held'

The distinction drawn by Marty between categorical and thetic sentences (judgments) is not identical to the contrast between SF structures and PF structures illustrated in (1) and (2). However, as I will show below, there is an interesting relationship between the two kinds of contrast.

In the thetic type in (5a), often exemplified with weather verbs, it seems relatively uncontroversial to assume that such sentences are logically simple in Marty's sense. They do not predicate a property of some entity or referent but they simply assert or "pose" (hence 'thetic') a fact or state of affairs. It is important to observe that the German and Latin examples in (5a) are *structurally* indistinguishable from subject-predicate (or topic-comment) sentences with pronominal or null subjects. For example there is no morpho-syntactic difference between the thetic sentence *It is raining* in (5a) and the categorical sentence in (6)

(6) It is leaking.

in which the subject pronoun *it* is referential (referring e.g. to some pot or water pipe). For sure, only in (6) but not in (5a) can a lexical noun (*pot, water*) replace the pronoun *it*. But this is not a matter of grammatical structure but of semantics only. The point is that Marty's cognitive contrast between thetic and categorical judgments is not necessarily expressed in grammatical form. As Marty himself has repeatedly pointed out (against various contemporary philosophers and grammarians), there is no one-to-one relationship between grammatical structure and logical structure. In the case of (5a), a subject-predicate (or 'categorical') *structure* is used to express an assertion which logically speaking has no subject (and pragmatically speaking has no topic). Notice however that the use of a subject-predicate (or topic-comment) *structure* for a non-predicating (thetic) *assertion* is possible only to the extent that such sentences do not involve full NPs. It is well known that in those languages (like e.g. Japanese or Russian) in which the meaning of (5a) is expressed by saying something like "Rain falls" or "Goes rain", the lexical NP must be grammatically marked via a SF structure (postverbal position, *ga*-marking etc.). Thus while the sentences in (5a) are not SF *structures*, they are related to such structures by their meaning. I will return to this important distinction beween logical form and grammatical structure later on.

Within the present analysis, with its grammatical rather than logical orientation, only those thetic sentences which contain full lexical NPs are directly relevant. A thetic sentence type which necessarily contains a lexical NP is illustrated in (5b). This is the type traditionally referred to as 'existential'. These sentences can, at least in principle, be paired with synonymous categorical sentences, allowing for the grammatical contrast illustrated in (1) and (2). This difference in the contrasting coding possibilities offered by the type in (5a) and that in (5b) allows me to postulate the following general principle concerning the relationship between grammatical structure and logical structure (in Marty's sense):

(7) Non-categorical (thetic) statements may be grammatically coded with subject-predicate structures only to the extent that they do not involve lexical subject NPs.

(7) is meant to capture the fact that languages are reluctant to blur the distinction between SF structures and PF structures, i.e. structures which involve overt lexical NPs. To put it differently, lack of a one-to-one correspondance between logical structure (thetic vs. categorical 'judgment') and a particular grammatical form (SF vs. PF structure) seems to be grammatically tolerable only with sentences containing no lexical subject NPs.

To my knowledge, the first systematic attempt to apply Brentano's and Marty's logical dichotomy to linguistic theory is Kuroda's study "The categorical and the thetic judgment. Evidence from Japanese" (1972). According to Kuroda, the logical distinction between the thetic and the categorical judgment is empirically confirmed in Japanese grammar in the formal distinction between the particles *wa* and *ga*. For example, the difference between the two sentences in (8)

(8) a. Inu ga hasitte iru. 'the dog is running'
b. Inu wa hasitte iru. 'the dog is running'

is analyzed by Kuroda as follows. The thetic sentence in (8a), which contains a *ga*-marked NP, represents "the fact that an event of running (...) is taking place, involving necessarily one (...) participant in the event." The speaker's intention is directed in (a) toward the entity participating in the event, i.e. the dog, "just insofar as it is a constituent of an event". In the categorical sentence in (8b) however, which contains *wa*, "the speaker's interest is primarily directed towards the entity (...) and the reason why he wants to give an expression to the fact that he recognizes the happening of the event (...)

is precisely that he wants to relate the occurrence of the event to this entity" (1972:162ff).

The entity to which an event is related by the speaker in this way is referred to by Kuroda as the 'subject', which is grammatically manifested in Japanese as a *wa*-marked NP. Thetic sentences such as (8a), on the other hand, in which the entity is only a necessary participant in an event, are called 'subjectless'. It is clear that Kuroda's notion of 'subject' is closely related to the notion of 'topic' or 'theme' in information structure terms, even though Kuroda explicitly rejects the explanation of *wa* as a topic marker. For my purposes, Kuroda's notion of a 'subjectless' sentence is equivalent to a 'topicless' sentence, the unique NP in our SF structures being a focus.

In a more recent analysis, Kuroda (1985) explains the difference between the two sentences in (9):

(9) a. Neko ga asoko de neteiru. 'A/the cat is sleeping there'
b. Neko wa asoko de neteiru. 'The cat is sleeping there'

by saying that (9a) "represents a thetic judgment, a simple recognition of the existence of a situation whereby it is the case that CAT BE SLEEPING", while (9b) "expresses a categorical judgment, affirming the predicate *asoko de nete iru* 'BE SLEEPING THERE' of the subject *neko* 'CAT'" (1985:11f). Further elaborating on the cognitive distinction between *ga* and *wa*, Kuroda suggests also that (9a) "is a direct linguistic response to the perceptual 'intake' of an actual situation. Such a perceptual intake must also be involved in (9b), but (9b) goes beond a simple cognitive response to the perceptual intake of information, beyond the simple recognition of a perceived actual situation. For (9b) implies the apprehension of the cat as some cat known to the speaker independently of the perception and then attributes to it the particular role it fulfills in the situation perceived" (1985:17).

Of particular interest in the context of this study is the fact, not mentioned by Kuroda, that thetic *ga*-sentences are also used in a *presentational* function, i.e. in utterances whose communicative purpose is to introduce a not yet activated referent into a discourse. Kuno (1972), in his functionally oriented analysis of the *wa*/*ga*-contrast, observes that *ga*-clauses of the kind discussed here, which he calls "neutral description" clauses, tend to be intransitive, containing verbs indicating existence or coming into existence of some referent or appearance of a referent at the scene of the discourse. It is well known that these are among the verbs found in presentational clauses across languages. Prototypical examples of presentational SF structures are listed in (10):

(10) a. JOHN arrived.
b. E arrivato GIOVANNI.
c. Y'a JEAN qui est arrivé.
d. JOHN ga kita.

The utterances in (10) could be used by a speaker to introduce the referent 'John' into the universe of discourse, from which point on this referent could be anaphorically referred to in (unaccented) pronominal or null form. The presentational function is particularly clear in the biclausal French construction, which consists of a presentational ("existential") clause followed by a (non-restrictive) relative clause.

The problem can now be phrased as follows: even though the *form* of the SF structures discussed earlier and that of the presentational sentences in (10) is the same, the two sets of sentences do not seem to serve the same *discourse function*. While the presentational sentences serve to introduce the NP referent into the discourse and to make it available for future reference, the referents introduced via the SF structures in (1) and (2) or (8a) and (9a) may be pragmatically non-salient discourse participants which perhaps will

never be mentioned again in subsequent discourse. The question arises then whether SF structures can be analyzed in information structure terms as 'presentational', if the purpose of such sentences is often not to "present" the NP referents? Would it not be more reasonable to assume that the SF structures in (1) and (2) and the presentational sentences in (10) are members of a superordinate category, i.e. the category 'thetic', and that this categeory can sometimes be used to express the presentational discourse function?

This is precisely the approach taken by Ulrich (1985) and Sasse (ms). These authors follow Kuroda in his claim that thetic sentences consitute a special cognitive and grammatical category, whose fundamental property is its non-binary semantic structure. However Ulrich and Sasse diverge from Kuroda in that they no longer see the thetic-categorical distinction as a *logical* dichotomy, but as a pragmatic dichotomy manifested on the level of the utterance. In a highly instructive survey of 'thetic' structures across languages, Sasse (ms) argues that "the thetic/categorical distinction (reflects) two different points of view from which a state of affairs can be regarded." And he goes so far as to claim that the distinction is "universally reflected in sentence structure in a way as basic as, say, the distinction between declarative, interrogative and imperative sentences." In order to accomodate the notion of 'theticity' in a pragmatically oriented grammatical framework, Sasse postulates a distinction between *communication perspective*, which relates to the sentence, and *information structure*, which relates to the text. Thetic sentences are then analyzed as manifestations of a special type of communication perspective, having to do with the kind of perspective a speaker has on an event when uttering a sentence.

To justify his distinction, Sasse analyzes a number of examples in which the choice of a thetic vs. a categorical sentence seems to be left up to the speaker, independently of the discourse context, and in which therefore "the classical criteria of information structure, prior mention, situative presence and knownness" cannot be invoked to explain the grammatical difference between SF structures and PF structures. The first example Sasse analyzes is the often-discussed sentence pair in (11) (from Schmerling 1976:41,90):

(11) a. JOHNSON died.
b. Trúman DIED.

The accent mark on the NP *Truman* in (11b) is a (rather vague) indication that this NP carries prosodic prominence in addition to the focus prominence on *DIED*. Since I am not concerned in this paper with the difference between various types of intonation contours but with the dichotomy between SF and PF structures, this vague indication is sufficient for my purposes. The pitch accent on *Truman* is due, I believe, to the fact that the referent had not been activated in previous discourse. As I noted earlier, this kind of accent is functionally to be distinguished from the focus accent represented by small caps. As Schmerling reports, the main pragmatic difference between these two utterances was that in (11b) the dying event was expected (Truman had been seriously ill for some time), while it was a total surprise in (11a). It is important for the argument to follow that the cognitive state of the referents of the two NPs was approximately the same in the two utterances, i.e. in both cases the referents were not discourse-active. As Sasse observes, in these examples "it is not the entity's degree of givenness which makes the difference but the background of expectation which embraces the entire information rather than merely the entity" (ms:16).

Another example discussed by Sasse is the German sentence pair shown in (12):

(12) a. Das BRATHENDL ist angebrannt. 'The CHICKEN burnt.'
b. Das Bráthendl ist ANGEBRANNT. 'The chĭcken BURNT.'

(12a), a SF structure, is uttered by a housewife to her husband who comes home from work and finds himself welcomed by a an unpleasant smoke. (12b) is uttered by the wife on another occasion, when the husband finds a hamburger on his dinner plate instead of the expected roast chicken. As in example (11), the referent of the NP *das Brathendl* is not pragmatically more "given" in (12b) than in (12a). This fact leads Sasse to conclude that the difference between the two sentences cannot be accounted for in the text-related terms of information structure, i.e. by appealing to the discourse properties of the NP referent. Rather, Sasse argues, the difference is one of 'communication perspective', i.e. has to do with the kind of information the speaker assumes the hearer *expects* to hear: in the thetic (12a), information was not expected about the chicken but rather about the smoke ("How come it smells burnt here?"); in the categorical (12b) however, information about the chicken was indirectly requested ("I expected chicken, how come you are serving hamburger").

It is not difficult to come up with additional examples in which the cognitive state of the NP referent alone cannot explain the difference in structure or intonation. Consider example (13). The SF structure in (13a) was uttered (or rather shouted) by someone working in front of a computer terminal, in the presence of collegues working at other terminals in the same room:

(13) a. Oh shit! The SCREEN's going dead!
b. The scréen's going DEAD again.

Notice that in the same situation the propositional content of (13a) could also have been expressed with the PF structure in (13b), especially with the adverb *again* added. The difference between the two utterances can thus not be due to a difference in the state of the referent 'the screen'in the minds of the speech participants. Rather it has to do with the fact that in (13a) the event is presented as more surprising, i.e. les expected, than in (13b). Unexpectedness of some event, however, has to do more with the perspective the speech participants have on the event than with the question whether the referent involved in the event is or is not new to the discourse.

Such real life examples indeed seem to lend support to the claim that the contrast between SF structures and PF structures may be best understood in terms of the thetic-categorical distinction, as postulated by Kuroda and reinterpreted by Sasse and Ulrich, rather than in terms of the "old-new" contrast. Even though I largely agree with Kuroda's, Ulrich's, and Sasse's description of the facts, and even though I share the frustration over the often deplored elusiveness of the concepts of information structure, I will nevertheless not adopt the thetic-categorical approach, because of certain inherent problems which I think can be avoided within the information structure framework, given careful reformulation of some of the relevant concepts.

A first problem I see in the thetic-categorial approach to the contrast between SF structures and PF structures lies in the already mentioned fact that the cognitive category 'thetic' is not always reflected in a corresponding category of grammar. If the defining criterion for thetic sentences is that they present information about situations rather than about entities, a thetic sentence like *It is raining* (cf. 5a) must be treated on a par with a thetic sentence like *My NECK hurts* (cf. 1a). However only one of the two sentences, the one containing the full NP, is formally contrastable with a corresponding grammatical sentence of the categorical type. This dilemma leads e.g. Ulrich (1985:34) to claim that the German sentence *Ich habe Angst* 'I am afraid' must be interpreted either as categorical or as thetic, depending on whether it is seen as a response to the question "What's the matter?" or to "How are you feeling?" As far as I can see, this difference is only pragmatic, not grammatical. But pragmatic structure without corresponding grammatical

structure cannot be captured with rules of grammar and lies therefore outside the domain of linguistics proper.

More serious is the following problem. Proponents of the thetic-categorical approach do not seem to be sufficiently concerned with the fact that all formal marking indicating 'theticity' crucially involves the overt presence of a *lexical subject NP*. The SF structures in (1) and (2) etc. are perceived as such only because of the way the lexical NP is marked. Thus corresponding synonymous sentences with *pronominal* subjects, which lack the NP marking, must be interpreted as categorical. Consider example (14):

(14) a. JOHNSON died.
b. *HE died
c. He DIED.

From the semantic point of view, as well as from the point of view of 'communication perspective', the two structures (14a) and (14c) may count as equivalent. They are both 'thetic' in the sense that they can be interpreted as reports of some striking event and can be used as answers to the question "What happened?". But notice that thetic or SF structure *marking* is excluded if the discourse status of the NP referent is such that pronominal coding would also be possible. The structure in (14b), in which a pronominal subject carries focus prominence, can only be construed as a narrow focus structure, thus excluding theticity. The thetic character of SF structures is a direct result of the presence of an overt (accented) lexical NP. Take the NP away and the thetic interpretation is gone.

For the information structure approach, on the other hand, this correlation between SF structures and the presence of lexical subject NPs presents no problem. Indeed it follows directly from the fact that full accented NP coding is a necessary (though not a sufficient) condition for the expression of a referent which is new to a discourse.[5] A new referent cannot be coded pronominally. Thus the occurrence of 'thetic' sentences is limited to discourse contexts in which the referent of the focus NP has not yet been pragmatically activated. This is tantamount to saying that SF sentences are inherently *presentational*, i.e. referent-introducing. I would like to argue that any grammatical construction which crucially involves the presence of a full lexical NP, i.e. which in principle excludes pronominal NPs, must be interpreted as presentational. The presentational character of SF sentences is confirmed by the fact that in many languages some or all SF constructions are limited to, or at least are preferred for, "indefinite" NPs, i.e. NPs whose referents are assumed to be unknown to, or unidentifiable by, the addressee (English existential *there*-sentences, Chinese inverted word order, etc.). In contrast, PF sentences have a strong tendency to tolerate only "definite" NPs, whose referents are "old" (cf, below). For example Kuroda observes that a *ga*-marked NP in Japanese can translate either as an indefinite or as a definite NP in English, whereas a *wa*-marked NP can only correspond to a definite (or a generic indefinite) NP in English.[6]

Another argument in favor of the interpretation of SF structures as presentational in a broad sense can be seen in the constraints imposed in many languages on the kinds of predicates which SF structures may contain. As mentioned earlier, the predicates most commonly permitted in SF sentences involve 'presenting' verbs, i.e. intransitve verbs expressing appearance or disappearance of some referent in the internal or external discourse setting, or the beginning or end of some state involving the referent. Consider the contrasts in (15):

(15) a. JOHN came / left / called / died / disappeared / is sick, etc.
b. *JOHN ate / studied / loves Mary / bought a book, etc.

While the sentences in (15a) can be uttered "out of the blue", those in (15b) can only

have the narrow focus reading, i.e. they require discourse contexts in which the various predicates are pragmatically presupposed.[7] The fact that the agentive predicate *call* and the stative predicate *be sick* are among those tolerated in FS sentences does not disconfirm the general characterization of such predicates as presentational. Indeed, when I say *JOHN called*, I do not wish to inform my addressee of some property of John; rather I introduce John into my interlocutor's awareness by mentioning the phone call. Similarly, in its preferred reading at least, the SF sentence *JOHN's sick* conveys the information that John has *become* sick recently, or has entered a state of sickness, not that he has been sick for a while or that he is always sick. This also explains the contrast between the two sentences in (16):

(16) a. *The BOOK is expensive.
b. The BOOK sold out.

Sentence (16a), containing a stative predicate, is anomalous in the SF, or thetic, reading, while in (16b) no such anomaly obtains.

In conclusion, I maintain that SF sentences, or 'thetic' sentences, are *presentational* in nature, i.e. that their grammatical form may be interpreted as being primarily motivated by the presentational discourse function. But how, then, can we account for such sentence pairs as those in (11) through (13), in which the presentational interpretation seems inconsistent with the facts, given that the cognitive status of the NP referents is the same or approximately the same, in spite of the grammatical contrast between two structural types? In the remainder of this paper I will suggest an explanation for this apparent contradiction, by making reference to a theory of information structure which I have presented in detail elsewhere (Lambrecht 1986) and to which I refer the reader who might be frustrated by the necessarily abbreviatory nature of the analysis.

3. Topic, focus, and the scope of assertion.

I will begin by making a fundamental -- and I think relatively uncontroversial -- assumption concerning the relationship between information structure and grammatical form. In the languages discussed in this paper, and perhaps in most languages, the subject-predicate structure illustrated in the B-examples in (1) and (2), and especially the structure in (3) which involves a non-lexical subject, represents the *unmarked* sentence type, both from the point of view of grammar and from the point of view of discourse. Its function is to express a *topic-comment* relation, i.e. a relation of aboutness between the referent of the subject and the proposition expressed in the sentence. The *subject* in these languages is the *unmarked topic* constituent. The *object* NP constituent on the other hand is the unmarked *focus* constituent. It is important to understand that I do not define the focus of a sentence as "the new information", even though a lexical object NP, unlike the subject, often has a referent which is new to the discourse. Rather I claim that the focus is to be understood as a formal *scope indicator*, i.e. as a grammatical signal indicating the scope of the assertion expressed by a sentence or proposition. The focus indicates which portions of the sentence are asserted and which portions are pragmatically presupposed. Thus when the focus is marked on the object or -- when no object NP is present -- on some other part of the predicate, this is a grammatical signal that the unmarked relation between presupposition and assertion obtains. A sentence structure in which this unmarked relation holds is a *predicate focus* structure. In the PF structure, the predicate is the domain of the assertion expressed by the sentence, excluding the subject, which is part of the pragmatic presupposition "behind" the sentence.

A PF structure is then defined as an information unit in which the subject is the topic and in which the predicate ("the comment") coincides with the scope of the assertion ("the new information"). It is irrelevant for this definition whether the subject is a lexical NP, as in (1) and (2), or a pronoun (incorporated pronominal morpheme, null subject) as in (3). Now for a referent to be interpretable as a topic, i.e. for a relation of aboutness to hold between a topic referent and a proposition, I claim that this referent must have certain discourse properties having to do with the degreee of cognitive and pragmatic *accessibility* it has in the discourse.[8] When a referent is insufficiently accessible in a discourse, no aboutness relation can be construed between it and the proposition and the unmarked subject-predicate structure or PF structure cannot be used. Instead a *presentational* sentence or *sentence focus structure* is used instead. The SF structure is a *marked* structure not only in the sense that it is less 'usual' or 'normal' than the PF structure. It is marked also in a more technical (though admittedly still somewhat vague) sense: while a PF structure may sometimes be underspecified as to its focus structure, especially in written discourse, a SF structure which is formally unambiguously marked as such cannot be used as a subject-predicate or PF sentence.[9]

In characterizing SF structures as 'presentational' I do not wish to imply that such structures are only used when a speaker introduces a previously unavailable discourse referent in order to refer to it anaphorically in subsequent discourse, as e.g. stipulated in Hetzron's (1975) definition of what he calls the 'presentative movement' (cf. also Wandruszka 1982:5). Hetzron's iconic notion of the presentative "movement" (placement of an NP closer to the subsequent clause, in which it plays the role of topic) is contradicted e.g. by the structural types illustrated in the English and Japanese examples in (1) (2) (a) and (d), in which the focus NP is sentence-initial. The grammatical coding of the subject NP in SF structures has to do with *markedness* rather than with iconicity (even though I do not exclude iconicity as an important motivating factor in certain instances). By calling SF structures 'presentational' I simply wish to express the idea that such structures are used to introduce an NP referent, or the concept associated with some NP, into the universe of discourse. Such a 'presented' NP is by definition not a topic NP in the clause in which it is introduced. The presented NP may be referentially non-salient or non-individuated, as in such sentences as *The SUN is shining* or *The PHONE is ringing*. In a sense, such non-individuated NPs in SF structures do not express discourse referents (in the sense of Karttunen, 1969), as it is normally impossible to refer to them anaphorically in subsequent clauses. For example the anaphoric pronoun *it* in the following sequences is awkward if intended to refer to the preceding NP:

(17) a. The SUN is shining. It makes me feel good.
b. The PHONE's ringing. It annoys me.

Rather the anaphoric pronoun tends to be interpreted as referring to the propositional content of the entire preceding clause. Such referentially non-salient NPs are in some important sense semantically "incorporated" into the predicate: the referent 'sun' is semantically incorporated into the predicate of (17a) in the same way the referent 'rain' is incorporated in the predicate of *It is raining*. This accounts for the "unitary" character which Chafe (1974) attributes to SF structures. This characterization of the role of certain presented NPs is also consistent with Kuroda's account of the role of *ga*-marked NPs in thetic sentences in Japanese.

It is important to understand that the notion 'sentence focus structure' defines a grammatical construction in which the *subject* is not a topic, and in which moreover the predicate does not express "old information", i.e. is not pragmatically presupposed (as in narrow focus constructions). SF structures may contain non-subject constituents which

are topics. One can imagine sentences like the following, in which a pronominal *object* has topic function in a SF structure:

(18) How's Mary? - She has terrible problems. She lost her job, and then her HUSBAND left her.

The formal criterion which distinguishes the two focus types, SF structures and PF structures, is that in the SF type the subject is marked as a non-topic, i.e. as being in the scope of the assertion rather than of the pragmatic presupposition. Sentence focus structures, or 'thetic sentences', can thus be defined as grammatical constructions expressing an asserted proposition in which the subject NP is not the topic. The fact that SF marking always crucially involves the subject constituent of a sentence is a result of the unmarked mapping situation which holds between subject and topic on the one hand, and between object and focus on the other hand. If an object NP is a focus constituent, there is no need to mark it as such. On the other hand, if an object is a topic, it can be marked as such via unstressed pronominal coding or deaccentuation.

A major advantage of the definition of focus sketched here is that it accounts for focus structure not only in narrow focus sentences, in which the focus constituent coincides with the assertion (this is the main focus type discussed in the generative literature since Chomsky 1972) but in all sentence types. Another advantage of the definition of focus as a scope indicator is that it is in principle independent of the phenomenon of prosodic prominence and therefore accounts equally well for the syntactic and morphological focus marking constructions illustrated in (1) and (2). Finally it has the advantage of being neutral with respect to the difficult and often unclear distinction between "new information" and "old information", a topic to which I will turn now. For example, it avoids the pitfalls of Bolinger's notion of "relative semantic weight" pointed out by Schmerling (1976:43 etc.).

With the above sketched notions of topic and focus in mind, let us now return to the problem of the contrasting pairs in (11) through (13). I believe that it is the notion of cognitive *accessibility* that offers the key to the puzzling contrast between these SF/PF pairs. Consider again example (11). Even though in this example the cognitive states of the two NP referents 'Truman' and 'Johnson' may be assumed to be similar in the sense that in neither context the referent was already activated in the minds of the interlocutors at the time of utterance, there is a clear difference in cognitive accessibility between the two. To see this difference, let us assume that an uncooperative speaker had expressed the propositional content of (11b) in the form of (14c), i.e. as *He* DIED. In this case, the addressee would probably have been able to eventually figure out the referent of the subject pronoun *he*, given the fact that Truman's illness and expected death could be taken for granted in the universe of discourse. The referent 'Truman' was accessible not in the sense that it was somehow remotely present in the addressee's consciousness but in the sense that is was a likely candidate to be matched up with the predicate *died*. The NP *Truman* can therefore be construed as a topic and the use of the PF structure is appropriate.[10] The meaning of (11a), on the other hand, could in no way have been conveyed by the same utterance *He died*. This is so because there was no previously established connection in the universe of discourse between a possible dying event and the subject referent 'Johnson'. Because of the non-accessible (inactive) status of this discourse referent, it would have been impossible to express the meaning of (11a) with a PF structure. The utterance *Johnson* DIED would have been highly inappropriate in the context, as it would have presupposed a pragmatic background which was not given in the real world context.[11] In conclusion, I believe that the difference between (13a) and (13b) is explained by the fact that 'Johnson' was a previously inactive referent and therefore had

to be introduced via a presentational SF structure, while 'Truman' was pragmatically already accessible and therefore a possible topic NP in a PF structure.

The phenomenon whereby the pragmatic interpretation of a sentence constituent (the subject) is dependant on the interpretation of another sentence constituent (the predicate) is well-documented in the case of competing pronominal referents. The following example is taken from Dahl (1976), who attributes it to Lashley (1951):

(19) a. Peter went to see Bill, but he was not at home.
b. Peter went to see Bill, but he had to return.

As Dahl observes, it is the semantic content of the proposition *following* the utterance of the pronoun *he* that accounts for the way in which the reference of the pronoun is construed in the two cases (*he* = Bill in (a) and Peter in (b)). This example shows that even in the case of clearly *active* discourse referents, referential construal may depend on factors other than assumed presence of a referent in the addressee's consciousness at the time of an utterance. It is therefore all the more likely that the pragmatic construal of a not yet activated discourse referent, such as *Truman* in (11b), may depend on the predicate with which it is associated in a topic relation. One may object that the two cases are not comparable, since *Truman* has only one possible referent in the universe of discourse while the pronoun *he* can be associated with a potentially infinite number of referents. I nevertheless believe that the analogy between (19) and (11b) holds. In both cases, what is crucially involved is the pragmatic construal of a topic referent on the basis of a given predicate.

The explanation of the contrast in the German example in (12) requires a slightly different account. In the SF structure (12a), the referent of the focus NP *das Brathendl* may be assumed to be pragmatically more accessible than that of *Johnson* in (11a) (it is likely that the unpleasant smoke is caused by burnt food, perhaps even burnt meat). In fact, we may assume that the referent is of *equal* accessibility in (12a) and in (12b), taking for granted that the husband knew that there would be chicken for dinner. In both contexts, the referent could be inferred from the situation. The difference between the two contexts is that this relative accessibility of the referent in the speech situation is not *exploited* by the speaker in (12a), because no topic-comment relation is *intended* here between the subject and the predicate. As mentioned earlier, (12a) is intended as an explanation for the smoke, not as a piece of information about the chicken. The SF structure, whereby the chicken is presented as a new discourse referent, is therefore the appropriate coding type. (12b) however is intended as information *about* the chicken itself. The chicken is an accessible (and acceptable) topic referent because of the inferential link established between it and the hamburger on the dinner plate, given that the chicken was expected instead of the hamburger. It can therefore be coded as a topic NP in a PF structure and be matched up with the predicate *ist angebrannt*. This explanation is consistent with the thetic-categorical explanations suggested by Kuroda and Sasse. However I think that it is preferable to those explanations because it is able to account for the fact that thetic sentences always have the form of presentational structures and necessarily involve full accented subject NPs.

4. Sentence focus and implicature.

My analysis of (11) and (12) in terms of the differences in cognitive and pragmatic accessibility of the respective discourse referents has not entirely eliminated the contradiction I pointed out at the end of section 2. If SF structures are presentational, i.e. if they serve to introduce previously inactive referents into a discourse, why are they also used in contexts where the NP referent is already cognitively accessible, as e.g. in (12)? To put it

differently, why are presentational sentences also used in contexts where the NP referent does not need to be "presented"? It is perhaps primarily this puzzling fact that has led various researchers to reject the information structure approach altogether, in favor of an approach in which no appeal is made to such notions as topic, focus, and the statuses of NP referents in the minds of the speech participants. The puzzle is particularly striking in example (13). Indeed this example shows that, given *identical* discourse contexts, speakers may sometimes choose between a SF structure and a PF structure.[12] Examples such as (13) demonstrate clearly that the cognitive status of the NP referent cannot always be invoked to account for the use of a SF structure.

To solve the apparent contradiction, I will summarize a hypothesis which I presented elsewhere (Lambrecht, forthcoming) to account for certain uses of the presentational *avoir*-cleft construction of spoken French and which I believe can be extended to cover the facts of English and of other languages. This hypothesis also accounts for the earlier mentioned fact that SF sentences are often interpreted as expressing *unexpected* or *surprising* pieces of information. Under this hypothesis, the expression of unexpectedness or surprise is not a semantic feature of the SF *structure* itself but rather an implicature conventionally associated with it and exploitable under specific discourse contexts.

The original presentational function of the French *avoir*-cleft construction illustrated in (1c) and (2c) is entirely transparent, given its form as a sequence of an 'existential' clause of the type "There is X" and a relative clause, in which the newly introduced NP referent appears in the form of a pronominal topic expression. Example (20) is a prototypical instance of this presentational use of the *avoir*-construction:

(20) Y'a un TYPE qui veut te parler. 'There's a guy (who) wants to talk to you'

As I have demonstrated in detail in the above mentioned study, the *avoir*-cleft may be used not only with NPs whose referents are assumed to be unidentifiable by the addressee at the time of utterance (i.e. with indefinite specific NPs) but with all NPs except those whose referents are already discourse-active. Now consider the following (very common) type of utterance, as made by a little boy to his mother, in the presence of the person referred to as *Jean*:

(21) Y'a Jean qui m'a donné un coup de pied! 'Jean kicked me!'
there is Jean who has given me a kick

Since Jean is standing right next to the speaker, the purpose of this presentational SF structure can hardly be to introduce the referent into the discourse. Rather the presentational construction is used here (instead of the equally possible topic-comment structure *Jean il m'a donné un coup de pied*) to express what the boy thinks is a particularly newsworthy piece of information. Example (21) is thus exactly parallel to the English example (13a) *The SCREEN's going dead!*, in which the presentational SF structure was used with a referent (the computer screen) which was already saliently present in the speech situation.

Even more striking are perhaps the following French examples, involving this time the deictic *voilà*-construction which, like the English deictic *there*-construction, is normally used to introduce new referents into the scene of the utterance (cf. Lambrecht 1986: Chapter 7):

(22) Figurez-vous, Monsieur, qu'ils n'étaient pas mariés depuis un an, paf! voilà la femme qui part en Espagne avec un marchand de chocolat. (Wehr 1985)
'Can you imagine, they hadn't even been married a year and bang! there's the wife running off to Spain with a guy who sells chocolate.'

(23) Lui, quelque temps après, pouf! le voilà qui meurt!
'(Him) shortly after, wham he dies'

In example (22) the referent of the NP *la femme* 'the wife' appears' in a deictic *voilà*-construction in spite of the fact that the referent is included, as an already established discourse topic, in the preceding pronoun *ils* 'they', referring to the wife and her husband. In example (23), the deictic SF construction is used with the unstressed pronoun *le*, i.e. with a referent that is already *active* in he discourse.

To account for this apparent clash between the presentational structure and the non-presentational discourse context I suggest the following explanation. Since, in their original discourse motivation, SF structures express propositions in which both the subject referent and the "predicate" are new to the discourse, i.e. in which the assertion extends over the entire proposition, they exhibit a certain "all new" character which distinguishes them from PF structures, in which only the predicate is asserted. The presuppositionless nature of SF structures entails that their utterance goes along with a "new start" in a discourse. By definition, they mark a point of rupture in the expected topic continuity. Once a grammatical construction is established in a language as a formal device used to express the kind of utterance I characterized as 'presentational', the all-new character which is inherent in the device can be *exploited* pragmatically via a special kind of conventional implicature, within limits set by the cognitive status of the NP referent (the referent of the focus NP cannot be entirely discourse-active).The connotation of "newness" becomes available as a semantic feature which is attached to the syntactic *structure*, independently of the pragmatic function originally motivating this structure. This connotation of newness will be stronger, the stronger the clash between the original presentational motivation of the structure and the actual pragmatic context in which the structure is exploited. The less the cognitive status of the NP referent warrants the use of the SF structure, the more the construction will give rise to the implicature that the piece of information expressed in the SF structure is of special importance. This, I claim, is the reason for the connotation of unexpectedness and surprise which often goes along with the use of a SF structure in discourse.

If my hypothesis is correct, we can draw from it an interesting conclusion concerning the relationship between grammatical form and the pragmatics of the speech situation. Grammar provides speakers with a number of syntactic, semantic, phonological, information-structural categories such as subject, predicate, NP, pronoun, stress, topic, focus, etc. Out of these categories are built grammatical constructions at the clause level which are motivated by particular communicative needs. One such construction type is the structure I have defined here as the Sentence Focus construction, which involves non-topical subject NPs. The pragmatic motivation for this construction is presentational, i.e. it serves to introduce referents which are not yet pragmatically available in a discourse. This pragmatically motivated grammatical construction can then be *exploited* for special communicative purposes which are not those originally motivating it. One such purpose, which corresponds to an obvious psychological need, is the expression of unexpectedness or surprise. However unexpectedness or surprise are psychological, not grammatical, categories. They are not directly expressed via a particular grammatical construction, but rather they arise as the result of implicatures drawn on the basis of special uses of the construction.

Endnotes.

1. To the extent that focus is manifested as a point of prosodic prominence, the use of capitalized *words* to designate the focus is only a rough phonological approximation,

since the pitch accent indicating the focus does not fall on a word but on a syllable. The prosodic manifestation of focus is much less clear in Japanese than in the other languages cited. However, as the discussion in section 3 will show, nothing in my argumentation hinges on the phonological manifestation of focus.

2. For an analysis of the difference between 'narrow focus' and 'broad focus' sentences and an explanation of why they sometimes look alike in English cf. Lambrecht (1986:Chapter 5).

3. For an analysis of French SF structures and a justification for the term 'cleft structure' cf. Lambrecht (1986 and forthcoming).

4. In fact, it is not the *referent* of the constituent that is 'active' or 'inactive' in the discourse, but some *discourse representation* of that referent in the minds of the speech participants (cf. Lambrecht 1986:Chapter 3). For reasons of simplicity, I will stick to the less accurate terminology.

5. Accented full NP coding is not a sufficient condition for coding of a new discourse referent because of the fact that full accented NPs occur also in narrow focus sentences, in contexts where the NP referent is fully discourse-active: cf. *Who did it, John or Bill? - JOHN did it.*

6. The necessary correlation between theticity and presentational function is indirectly acknowledged also by Sasse. Sasse observes that in all of the languages he has examined those grammatical mechanisms which he found to mark the distinction between thetic and categorical statements are the same as those distinguishing *existential* sentences from *topic-comment* sentences.

7. For the sake of completeness it must be acknowledged that it is not sufficient for a predicate to express one of the meanings illustrated in (15a) for it to be useable in a SF structure. Thus while *JOHNSON died* is well-formed in the relevant context, *JOHNSON suffocated* e.g. is not, as pointed out by Bolinger (1953 and this volume). In Lambrecht 1986 I offer a (very tentative) explanation for this contrast in terms of the distinction between 'basic level' and 'subordinate' categories made in Prototype theory.

8. For a detailed discussion of these constraints cf. Lambrecht 1986:Chapter 3.

9. This point is made by Ulrich 1985:71f.

10. The explanation of (13a) in terms of topic-comment structure is already suggested by Schmerling (1976:93). My notion of cognitive accessibility may be seen as a reformulation of her unanalyzed notion of "old information".

11. The lacking presupposition would then likely have been supplied by the puzzled addressee via the pragmatic adjustment phenomenon referred to by Lewis (1979) as *accomodation*. This is nicely confirmed in the following exchange, related to me by Sue Schmerling (who has it from Ellen Prince, who observed it in actual speech): upon hearing someone who was reading a newspaper utter the sentence *Miró DIED*, the speaker, surprised, replies: *Why, was he sick?* The pragmatic presupposition behind the topic coding of the NP via a PF structure is so strong that the speaker assumes that the possibility of Miró dying must have been pragmatically presupposed in the universe of discourse.

12. Further examples of this kind are provided by Schmerling (1976:90ff).

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Grammatical Ramifications of the Setting/Participant Distinction

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I will assume some version of cognitive grammar (Langacker 1986a, 1987), and start by presenting a few of its basic claims. It is asserted, first, that all constructs required for the proper characterization of grammatical structure are inherently symbolic, and thus have some kind of conceptual import. Second, a grammatical construct resembles a lexical item in that semantically it constitutes a complex category, i.e. it has a network of alternate semantic values clustered around a prototype (cf. Lakoff 1987). In some instances this network includes a highly abstract or schematic value which subsumes all the others as special cases. A third claim is that semantic structures are characterized relative to cognitive domains (also called "frames" or "idealized cognitive models"). Any type of conceptualization is capable of serving as the domain for a linguistic expression. Finally, it is claimed that an element's semantic value does not reside solely in its conceptual content, but crucially depends on how this content is construed. Aspects of construal include the perspective from which a scene is viewed, the relative prominence accorded its various substructures, the effect of expectations and background assumptions, and so on.

Elsewhere I have argued (in press a, b) that the prototypical semantic values of certain fundamental grammatical constructs pertaining to clause structure are characterized with reference to a particular cognitive model. This archetypal model, sketched in Fig. 1, amounts to the conception of a canonical action. It involves the energetic interaction of discrete, mobile participants within a stable and inclusive setting, any fragment of which can be regarded as a location. Participants merely occupy locations, but they interact with one another through physical contact and the consequent transmission of energy. In a canonical action, participant interactions assume the form of an action chain leading from an agentive energy source, through a possible intermediary with instrumental function, to an energy sink which undergoes a resultant change of state.

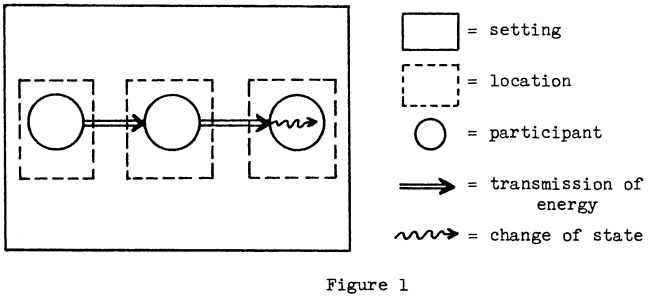


Figure 1

Prototypically, a finite clause profiles (i.e. designates) an action of this sort construed as constituting a single event. The agentive energy source is coded as the clausal subject, and the energy sink as direct object; the agent and patient roles thus serve as prototypes for these central grammatical relations. Locations and non-central participants (e.g. instruments) are generally coded by noun phrases explicitly marked as oblique, while settings are expressed by clause-level adverbs. A sentence like (1) therefore represents the unmarked linguistic coding of a canonical action, with the constructs mentioned assuming their prototypical values.

(1)	In the kitchen,	Seymour	sliced	a salami		
	SETTING	AGENT	EVENT	PATIENT		
	(clausal adverb)	(subject)	(verb)	(object)		
					on the counter	with a knife.
					LOCATION	NON-CENTRAL PARTICIPANT
					(oblique)	(oblique)

Of course, not every situation described by a finite clause conforms to the archetype in Fig. 1, and a situation need not be construed or coded linguistically in the maximally unmarked fashion. When clauses depart from the unmarked coding of canonical actions, the grammatical constructs in question assume non-prototypical values. For instance, conventional patterns of English grammar allow the subject to be an instrument or an inanimate force rather than an agent, and the object to be a mover or an experiencer rather than a patient undergoing a change of state:

(2)(a) This knife won't cut the salami.
(b) The wind blew the leaves about.
(c) Tommy tickled his new secretary.

To accommodate both the prototypes and these secondary values, we can characterize a subject more schematically as the head with respect to the explicitly coded and profiled portion of an action chain, and a direct object as the tail in such a chain (hence the subject is the participant farthest upstream in the flow of energy, while a direct object is the participant farthest downstream).

Of course, many subjects and objects elude even these more schematic definitions:

(3)(a) Joey saw a comet last night.
(b) Line A intersects line B.

If schematic characterizations compatible with the full range of clausal subjects and direct objects are possible at all, they must

therefore be highly abstract, with very little intrinsic content. It is my working hypothesis that a subject is properly characterized as figure with respect to the profiled relationship; what all subjects have in common is thus a matter of construal (figure/ground organization), whereas the category prototype further invokes specific conceptual content (Fig. 1). A direct object can perhaps be characterized as the second most prominent clausal participant (apart from the subject), with the further proviso that it must lie downstream from the subject either in the flow of energy or in some abstract analog of energy flow. In a sentence like (3)(a), the gaze or perceptual path leading from the subject to the object is construed as the analog of energy flow. The limiting case, in which the requisite directionality is entirely subjective, is illustrated in (3)(b): the profiled relationship is inherently symmetric in terms of its content, but the speaker--by choosing line A as relational figure and mentally scanning its expanse--construes it as reaching line B and extending beyond (cf. Langacker 1986b).

Observe that the above definitions, without additional specifications, neatly accommodate passive clauses. Both sentences in (4) profile an action chain involving energy flow from an agent to a patient:

(4)(a) Some workmen trampled the grass.
(b) The grass was trampled by some workmen.

By choosing the action-chain head as subject, (4)(a) codes the scene in unmarked fashion, and the grass qualifies as direct object because it lies downstream from the subject in the flow of energy. The coding effected by a passive, on the other hand, is marked: the tail (not the head) of the action chain is selected as figure within the profiled relation. As relational figure, the grass in (4)(b) nonetheless conforms to the most schematic definition of a subject, which abstracts away from semantic roles. Moreover, some workmen is correctly excluded by the definition of direct objects, since the workmen lie upstream (not downstream) from the subject in terms of energy flow. The passive agent therefore qualifies as neither subject nor object; if coded at all, it must be expressed periphrastically by an oblique (cf. Langacker and Munro 1975; Langacker 1982).

By the proposed definition, a direct object must be construed as a participant rather than a setting or location. The role of construal is essential, since the setting/participant distinction is anything but absolute. Though some entities invite a particular construal, others--like the counter in (5)--are ambivalent:

(5)(a) He sliced a salami on the counter. (LOCATION)
(b) The sharp knife marred the counter. (PARTICIPANT)
(6)(a) Everything is peaceful in the countryside. (SETTING)
(b) The napalm bombs scorched the countryside. (PARTICIPANT)

Even a prototypical setting like the countryside sometimes functions as a participant, as we see in (6), and the converse also occurs. The status of an entity as setting or participant is not imposed by objective factors, but depends instead on how a speaker conceives and portrays a given situation.

The setting/participant distinction is one factor explored by Sally Rice (1986) in relation to transitivity and passivization. In particular, she examined the possibility of a Verb + Preposition sequence being analyzed as a complex verb, with the following NP then treated as its direct object. Rice noted data like the following:

(7)(a) Fred rushed to Marsha, because he needed advice.
(b) Marsha was rushed to by Fred, because he needed advice.
(c) Fred rushed to the countryside, because he needed a rest.
(d) *The countryside was rushed to by Fred, because he needed a rest.

The evidence of passivization suggests that rush to coalesces to form a complex transitive verb when the following NP is human (hence a canonical participant), but fails to do so with an NP like the countryside, which inherently favors construal as a setting. Transitivity and passivization are therefore not lexical properties of the V + P sequence, but reflect how the scene is construed on the basis of the NP's meaning and the full sentential context. Rush to forms a complex verb in (7)(a) because Fred is construed as interacting with Marsha, whereas in (c), the countryside is merely portrayed as Fred's final location.

Both the model in Fig. 1 and the proposed characterization of direct objects pertain to clause-level organization. There is consequently no reason why objects at other levels of organization, notably prepositional objects, might not occasionally be construed as settings or locations. Consider in this regard the data in (8).

(8)(a) I sent the flashlights to Colonel North.
(b) I sent the flashlights to Australia.
(c) I sent Colonel North the flashlights.
(d) *I sent Australia the flashlights.

Colonel North and Australia are each capable of serving as the object of to, since either a participant or a location is readily construed as the endpoint of a spatial path. By contrast, only the former is possible as the first post-verbal NP in the "dative shift" construction, as illustrated in (c)-(d). I analyze this NP

as the true direct object of send, and have argued (1986a) that this construction predicates a resultant possessive relationship between the first post-verbal NP and the second. Because of its interactive role as both recipient and final possessor, the first NP must be construable as a participant.

Some prepositions may actually require that their objects be locations rather than participants. Mike Smith (in preparation) has noted that this appears to be so for the German preposition bis 'until, up to':

(9)(a) Ich fahre nur bis Stuttgart.
'I'm driving only as far as Stuttgart.'
(b) Ich arbeitete bis zehn Uhr.
'I worked until ten o'clock.'
(c) Er begleitete mich bis an die Tür.
'He accompanied me up to the door.'

Cities and points in time are normally construed as locations, and an NP which profiles such an entity occurs unproblematically as the object of bis. However, when the endpoint of the path is even slightly more participant-like, such as the door in (9)(c), bis requires a following prepositional phrase instead of a simple NP.

Independently-established notions of cognitive grammar afford a straightforward account of this construction. Despite its form, I analyze the prepositional phrase an die Tür as nominal rather than relational in (9)(c), i.e. it profiles a spatial region, and is consequently acceptable as the locational complement required by bis. The region in question corresponds to what Hawkins (1984) calls the prepositional phrase's search domain: the set of points to which a locative expression confines the located entity. There is independent evidence that grammatical constructions can refer to a region so defined (cf. Langacker 1986a). Moreover, the use of a prepositional phrase as a nominal expression to designate its search domain is attested by sentences like the following:

(10)(a) Near the fire is warm.
(b) Under the bed is all dusty.

A parallel nominalization of the normally relational an die Tür is posited for (9)(c).

The setting/participant distinction is a matter of conceptual construal, and need not be marked overtly (cf. (7)(a) vs. (7)(c), (8)(a) vs. (8)(b)). In particular, there is no reason to expect that a location will invariably be marked as oblique, especially when its non-participant character is readily apparent. Since only participants qualify as direct objects, it is therefore possible for a clause with two non-oblique nominal complements to be intransitive nonetheless. Sentences of this form, involving motion verbs, are found in Classical Nahuatl:

(11) ne?waatl in aaltepeetl ni-ya-?
I ART town I-go-PAST
'I went to (the) town.'

Nothing marks in aaltepeetl as oblique--its form is the same as when it functions as subject or (under participant construal) as direct object. Yet the clause is clearly intransitive: if in aaltepeetl were a direct object, it would be cross-referenced by an object prefix on the verb. The nouns that occur in this construction are mostly place names (Andrews 1975, p.281), so their analysis as locations is unproblematic. They are complements of the motion verb (designating the endpoint of the profiled path), but not direct objects.

Intransitives with two non-oblique nominals are also found in Mixtec (Brugman and Macaulay 1986):

(12)(a) bílu wáā hiža nuù-žuu
cat that be:located face-mat
'The cat is on the mat.'
(b) ni-ndečé ɨɨ saà žata-žúnu
PERF-fly one bird back-tree
'A bird flew behind the tree.'

For the most part, Mixtec employs noun compounds based on body-part terms in lieu of relational expressions like a prepositional phrase. The first member of such a compound is the noun regularly used for the body part in question, and Brugman (1983) has argued persuasively that in these compounds they retain their nominal character. A noun, however, can profile either a participant or a location. Though a body part per se would generally be thought of as a participant, it can perfectly well be construed more abstractly as a location (presumably, position and spatial extension are thereby highlighted at the expense of material substance). The use of žata in (12)(b) thus reflects a series of semantic extensions: from '(human) back (PARTICIPANT)' to '(human) back (LOCATION)'; from there to designating the analogous location with respect to some non-human entity (such as a tree); and then to indicating a contiguous region in space.

The definitions proposed earlier treat subjects and direct objects asymmetrically. The most schematic definition of a subject specifies nothing more than its status as relational figure: it need not be a participant, nor does it require the presence of an object. By contrast, a direct object must be a participant, and further requires a subject (conceptually if not overtly) that is also a participant and lies upstream in the flow of energy (or some analog). The notion of a direct object is thus tied fairly closely to transitivity and the endpoint of an action chain, whereas that of a subject is inherently more flexible and variable (cf. Givón 1984, p.187).

This asymmetry has grammatical consequences, one of them being that single-participant clauses (e.g. Abernathy died) have

subjects rather than direct objects. Other consequences reflect our capacity, easily demonstrable on non-linguistic grounds, for imposing alternate figure/ground alignments on a scene. The phenomenon of figure/ground reversal, for instance, is manifested linguistically in the active/passive contrast: whereas an active clause chooses the head of an action chain (or its analog) as relational figure, a passive reverses the natural alignment and confers this status on the action-chain tail. Moreover, nothing rules out the possibility that even a non-participant might be selected as clause-level figure. In particular, I suggest that a substantial array of grammatical constructions are revealingly analyzed as elevating some type of setting to the status of figure and clause-level subject.

The special character of these setting-subject constructions is schematized in Fig. 2. Heavy lines indicate prominence (one aspect of construal). In Fig. 2(a), which represents the unmarked coding of a scene, the most prominent entities are the profiled activity and the participant selected as subject; the setting has no special prominence and need not even be explicitly coded. A setting-subject construction, depicted abstractly in Fig. 2(b), may have precisely the same conceptual content, but differs in its construal. The setting itself is chosen as subject and thereby rendered prominent. Since a subject is characterized as the figure within a profiled relationship, elevating the setting to this status has the automatic consequence of expanding the profile to include the relationship between the setting and the activity unfolding within it; I have indicated this "container"/"contents" relation with a dashed line. Thus, if V stands for the profiled activity in 2(a), the profiled relationship in 2(b) has a value something like 'be the setting for Ving'.

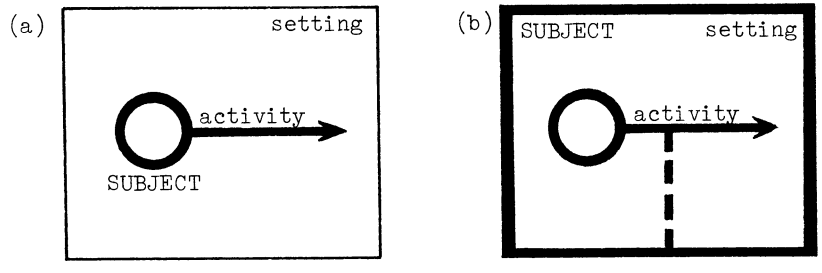


Figure 2

One kind of setting-subject construction is illustrated in (13):

(13)(a) This arena witnesses many thrilling contests.
(b) Tuesday saw yet another surprising development.

The subjects in (a) and (b) represent a spatial and a temporal setting, respectively, and the profiled relationships have the approximate value 'be the setting for witnessing/seeing'. It is well known that sentences of this type do not passivize:

(14)(a) *Many thrilling contests are witnessed by this arena.
(b) *Yet another surprising development was seen by Tuesday.

Their failure to do so is predicted by the present analysis. Passivization only affects transitive clauses, but since the subjects in (13) are settings rather than participants, the post-verbal NP's do not qualify as direct objects.

Spatial and temporal settings are prototypical, but do not exhaust the possibilities. A film, for example, is plausibly construed as a setting for its actors. This explains the data in (15):

(15)(a) Fellini features Yakov Malkiel in his new film.
(b) Yakov Malkiel is featured by Fellini in his new film.
(c) Fellini's new film features Yakov Malkiel.
(d) *Yakov Malkiel is featured by Fellini's new film.

The subject in (15)(a) is a participant, hence the post-verbal NP is a direct object and passivization is permitted. However (15)(c) does not passivize, for it lacks a direct object because the subject is construed as a setting.

Though I have not studied them in detail, I suspect that various so-called "dummy-subject" constructions are better analyzed as setting-subject constructions, where the setting in question is either abstract or maximally schematic. I see nothing implausible in the notion that the "dummy" there might refer to an abstract setting such as the realm of 'existence' or, as proposed in Bolinger 1977, of speaker/hearer 'awareness':

(16)(a) There are many llamas in Peru.
(b) There's somebody on the roof.

Attributing such a value to there, and further according this abstract setting the status of clausal figure, may well account for the "presentative" function of this sentence type. The same is true for German sentences with "dummy" es in the genre of (17):

(17)(a) Es steht eine Vase auf dem Tisch.
'There stands a vase on the table.'
(b) Es spielt ein Kind im Garten.
'There's a child playing in the garden.'

According to this type of analysis, (17)(a) evokes the conception of an abstract realm of existence or awareness and then establishes within this setting the relationship of a vase standing on the table (cf. Smith 1985). I would further propose

that the "ambient" it occurring with weather verbs be interpreted as a maximally schematic setting, i.e. it has no intrinsic content apart from that which constitutes the very notion of a setting, and as such is amenable to variable construal consistent with the meaning of the verb (cf. Chafe 1970, Bolinger 1977, Ruwet 1986). It follows, of course, that when such a verb takes an additional NP as complement (e.g. It's snowing big flakes), this complement is not a direct object, and the sentence does not passivize. The examples in (16)-(17) are similarly non-transitive.

A further class of constructions involve a person or body as a whole being construed as the setting for phenomena occurring within its confines. My favorite example is (18)(a) (cf. The garden is swarming with bees; The sidewalks are bustling with shoppers):

(18)(a) My cat is crawling with fleas.
(b) *Fleas are being crawled with by my cat.

The fleas are the ones doing the crawling, but when the cat is raised to the status of clausal figure, the profiled relationship assumes the approximate value 'be the setting for crawling'. Since this is a setting-subject construction, fleas cannot be a direct object. The V + P sequence crawl with is consequently incapable of coalescing into a complex transitive verb, so the passive, (18)(b), is decidedly ill-formed.

The so-called "double-subject" constructions can also be analyzed along these lines. The following Luiseño examples are from Steele (1977), who argues that both the clause-initial pronoun and the following body-part noun are subjects:

(19)(a) noo=p no-te? tiiwu-q
I=3s my-stomach hurt-TNS
'I have a stomach ache.'

(b) noo=p no-puuš konokniš
I=3s my-eye green
'I have green eyes.'

Central to Steele's argument is the behavior of the subject-agreement clitic, which follows the first word or constituent of a sentence: although the clitic generally agrees with the possessed body-part noun, as in (19), it occasionally agrees instead with the preceding pronoun (in which case =n '1s' would occur in lieu of =p). My own proposal is that these expressions represent a setting-subject construction, as sketched in Fig. 2(b): the initial pronoun functions as the clause-level subject, which specifies the setting for the relationship involving the body part. How, then, is the behavior of the clitic to be accounted for? In a typical finite clause, the clitic agrees with an NP that combines several properties: (i) it is construed as a participant; (ii) it is the subject (relational figure) with respect to the verb; and (iii) it is also the subject at the clausal level of organization. By definition, however, these properties cannot all be associated with a single NP in a setting-subject construction. In particular, the body-part term

in (19) retains properties (i) and (ii), while (iii) attaches to the initial pronoun. Hence agreement in this construction cannot conform to the prototypical pattern, and there are alternate ways in which a partial match can be achieved. Thus ambivalence in the choice of clitic is hardly surprising.

Japanese also has a double-subject construction, which I would analyze in parallel fashion. Shibatani (1986) cites the following example:

(20) Taroo ga hana ga hikui.
Taro SUBJ nose SUBJ flat
'Taro has a flat nose.'

Observe that both the subject (construed as a setting) and the body-part term are capable of being marked by ga. In prototypical uses, ga marks an NP that manifests all of properties (i)-(iii) cited above, but in (20) these properties are split between Taroo and hana. Japanese accommodates this special construction by allowing ga-marking with either NP, each of which approximates the prototype in certain respects.

Shibatani also discusses constructions in which ga seems to be marking a direct object:

(21) Taroo ni eigo ga wakaru.
Taro DAT English SUBJ understand
'Taro understands English.'

In accordance with an independently motivated analysis of dative case (Langacker in press a, b), I propose that Taro is construed in (21) as the setting for a mental experience. It follows that eigo 'English' is not a direct object, whether Taroo is analyzed as the subject or simply as a preposed, non-subject setting expression (cf. (1)). These alternate analyses are sketched in (22).

(22)(a) Taroo ni — SETTING; eigo ga — PARTICIPANT (subject); wakaru.

(b) Taroo ni — SETTING (subject); eigo ga — PARTICIPANT (non-object); wakaru.

In (22)(a), eigo is the subject, and thus takes ga by virtue of properties (i)-(iii) above. Suppose, on the other hand, that Taroo is the subject, as in (22)(b). In this event the occurrence of ga with eigo is non-prototypical, but motivated by the fact that this NP is a non-object and the most prominent clausal entity with participant status. Observe that the difference between these two analyses is not a drastic one in the present framework--they correspond respectively to Figs. 2(a) and 2(b), which contrast only in the figure/ground organization imposed on their shared

conceptual content. Viewing things in these terms, one can readily envisage a preposed-setting construction evolving historically into a setting-subject construction.

Let us conclude by returning to the basic assumptions of cognitive grammar, notably the claim that all valid grammatical constructs have some type of conceptual import. I have attempted to specify the conceptual basis for constructs and phenomena normally treated in purely "syntactic" terms: these include the subject and direct object relations; certain types of "chômeurs"; "dummy" or "expletive" subjects; and various restrictions on passivization. The foregoing discussion is not offered as either comprehensive or definitive. It may however suggest the naturalness and potential insight of approaching grammar in this fashion, and also the widespread grammatical significance of the setting/participant distinction.

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THE COGNITIVE BASIS OF CLASSIFIER SYSTEMS

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There have been two general hypotheses about the composition of noun classes in a classifier system. Works such as Allan (1977) and Adams and Conklin (1973) focus on the inherent properties which all (or at least most) of the members of a class share and try to provide an exhaustive list of the semantic features which serve as the basis for classification in natural language. They explain the recurrence of particular features in different languages on the basis of human perceptual faculties, explicitly treating noun classes as cognitively-based categories. Denny (1976), on the other hand, sees classifiers as a means of partitioning the world into a set of functional classes. "Nouns have more to do with what is out there in the world, and classifiers more to do with how humans interact with the world" (Denny 1976). Noun classes are socially determined categories, and class assignment is made on the basis of an object's primary social function.

Each of these two perspectives accounts for a certain range of the known facts about classifier systems. In particular, a cognitive approach provides the clearest explanation for the frequent similarities between the (inanimate) noun classes in widely varied languages, while a social/functional approach more effectively deals with classifiers of social rank, which are based on status rather than 'inherent' characteristics. However, some of the predictions made by a strong version of each claim are incompatible with the other view. In this paper I show that the two views of classifier categories are not incompatible, but complementary. In essence, I claim that classifiers set up socially-based cognitive categories -- ultimately deriving from basic level categories.

A classifier is an independent morpheme which "denotes some salient perceived or imputed characteristic of the entity to which the associated noun refers" (Allan 1977). The most common type of classifier (and the type which I am primarily concerned with) is the numeral classifier, which is so named because it occurs obligatorily (between the number and the noun) in counting constructions. The closest thing English has to classifiers occurs in measure phrases such as:

8 head of cattle
5 sheets of paper
9 gallons of gas

The word which immediately follows the numeral picks out some characteristic of the noun that is being counted. Sheet tells us that paper is flat, two-dimensional: it can only occur with

TABLE 1

Semantic Features of Noun Classification (Allan 1977)

1. Material
   a. animacy
   b. abstract nouns
   c. material
2. Shape
   a. saliently one-dimensional
   b. two-dimensional
   c. three-dimensional
3. Consistency
   a. flexible
   b. hard or rigid
   c. non-discrete
4. Size
5. Location
   a. inherent location
   b. contingent location
6. Arrangement
   a. objects in specific, non-inherent configuration
   b. position
   c. objects in non-inherent distribution
7. Quanta

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nouns having this property. In a classifier language, this type of construction is generalized to include what would be count nouns in English. A prototypical example is Mandarin Chinese.

liang zhi qianbi 'two (long-thing) pencils'
yi ben shu 'one (flat) book'

The most comprehensive cross-linguistic examination of classifier systems was made by Allan (1977). Allan looked at the noun classes in more than 50 languages and compared the kinds of things that were grouped together by classifiers. He found a small set of features which appeared again and again as the "defining criteria" for noun classes. These features are listed on Table 1.

Allan (1977) notes that, with a few exceptions, these properties which are picked out by noun classifiers are 'inherent' properties of an object rather than contingent ones. The exceptions (5b, 6, and 7) serve as the basis of categories in non-classifier languages as well, while categories based on the first five properties are found only in classifier languages[1]. These results suggest that the distinguishing feature of a classifier language is having a system which groups nouns according to their inherent characteristics.

Allan's claim is actually much stronger than simply that classifiers group nouns by inherent properties. His very specific list of features (Table 1) limits the range of possible classifier systems fairly radically. What is most interesting is that a majority of the properties are either visual or tactile, to the exclusion of smell, taste, and sound. The shape of an (inanimate) object is by far the most common basis for its classification. Nearly every classifier language has a classifier for long skinny objects (i.e. objects which are extended in one dimension), and classifiers for flat (two-dimensional) and round (three- dimensional) objects are also very common. Adams and Conklin (1973) go so far as to say that (besides animacy) extension in one-, two-, or three- dimensions is the only "primary" basis for noun classes, the other features being "secondary" parameters which are used in combination with shape to increase the number of classes[2]. They quip, "the semantics [of classifiers]...are observable to those who have eyes to see (the nose to smell is not necessary)."

Even within the two prominent sense domains not every possible criteria is picked up on. For instance, color is not an attribute on which classification can be based. Therefore, we should not find a language which has a noun class consisting of only green things[3]. The reason that color is not a good basis for classification (although it is often an inherent characteristic) may be that it is much more subject to recognition error. Color changes in different light conditions, while an object's shape remains constant. Allan (1977) points out that the properties on his list are not coincidentally those which Locke identified as the "primary qualities of bodies." Joseph Greenberg has also pointed out that you rarely find color in the dictionary definition of an object, but always a description of its shape.

As an added bonus, the properties on Table 1 can be independently verified as cognitively salient. For example, Eve Clark (1976) has shown that these same features serve as the basis for children's over-extension of lexical items during acquisition. "The basis for categorization discernible in the child's early uses of words often bears a strong resemblance to that found in actual classifier systems. In both, visual perception appears to play a major role in determining category membership" (Clark 1976). The most frequent over-extentions are based on shape, e.g. the word <u>moon</u> to all round objects, or <u>stick</u> to all long objects. And "one notable absentee from the kinds of over-extension found in children's speech is color" (Clark 1976).

All of these findings support an explanation for classifier semantics which resides in the perceptual apparatus of the human species. "The properties chosen as criterial for category membership...are presumably those that are most salient...These natural categories may be universal precisely because they have a common cognitive basis" (Clark 1976). This perceptual basis of classification negates the extreme cultural relativism which

might be construed from the superficial diversity of attested systems. Classifier systems around the world differ only in which perceptual data they choose to pick out. As Brown and Lenneberg (1954) put it: "In general it looks as if there is a potential for sensory discrimination characteristic of the whole human species. Language communities do not differ in this potential but rather in their manner of categorizing potentially discriminable experience."

Importantly, this difference in manner extends not only to the choice of noun classes, but also to the assignment of a given object to a particular class. Claiming that classifier categories have internal consistency is not the same as claiming that the class of an object is predictable. "The relationship between noun and classifier...is typically explicable, but not always predictable..." (Allan 1977). Every object has a large number of discernible characteristics, and languages can differ in their choice of which features are important for classificatory purposes. For example, the word for 'table' might be put into the class of three-dimensional objects (as it is in Malay), but is more often classed as two-dimensional since the (flat) functional surface is its important characteristic.

Often the decision is based on a conventional image that the culture has of the object in question. In Mandarin, yizi 'chair' is classified with objects that have handles (ba) -- because traditional Chinese chairs have handles on them. In some cases, a language does not make a conventional decision about salient features, and the choice is left to the speaker. Different features are salient in different situations, so a given noun can take more than one classifier, depending on which feature the speaker wishes to highlight (cf. Table 2).

The indeterminacy of classification and the role of conventional imagery creates a situation in which classes can (and almost invariably will) lose their semantic transparency. Once Chinese speakers become familiar with handleless chairs, the ba class is not limited to objects with handles. And if the cultural image is lost over time, the class becomes even more opaque. The apparent arbitrariness of the noun classes in a language like, e.g., Dyirbal (Dixon 1982) is not a problem for

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TABLE 2. Burmese (Becker 1965)

myi?te ya?	'river one place' (e.g. destination)
myi? te tan	'river one line' (e.g. on a map)
myi? te hmwa	'river one section' (e.g. a fishing area)
myi?te 'sin	'river one distant arc' (e.g. a path)
myi? te owe	'river one connection' (e.g. tying two villages)
myi? te 'pa	'river one sacred object' (e.g. in myth)
myi? te myi?	'river one river' (the unmarked case)

this type of analysis as long as the features on Table 1 are not taken as strict necessary and sufficient conditions on membership, but rather as the basic distinction between classes[4].

A much more problematic area for the cognitive/perceptual analysis presented here is that of animacy. Every classifier language has an animacy distinction, often with more than one animacy class. Even English has a residual animacy distinction in words like someone vs. something or everyone vs. everything (Allan 1977). But as Allan (1977) points out, animacy is not an inherent characteristic of an object but an 'imputed' one, and is futhermore highly culture specific.

The only way to make animacy fit into the picture as I have painted it so far is to claim that animacy distinctions are made by means of certain discernible properties, and that languages differ only in which properties they pick up on. In some cases animacy distinctions are clearly made on the basis of perceivable 'inherent' charateristics. Objects which seem to move on their own (e.g. cars) are often considered animate, and mammals are frequently 'more animate' than other animals (presumably due to a genetic closeness to humans). However, these are marked cases. More frequently, animacy hierarchies extend into the social order. In many societies, people in different social classes are assigned to different classifiers. The basis for the distinctions within a society are most often age, occupation, and kinship. The cultural pantheon also plays an important role.

Jacaltec Animate Classes (Craig 1986b)

cuman	male diety	cumi?	female diety
naj	male non-kin	ix	female non-kin
ho?	male kin	xo?	female kin
ho?-ni?an	young male kin	xo?-ni?an	young female kin
unin	infant	ya?	respected person

It is interesting, and most damaging for the theory so far, that sex is never used as a primary distinction between classes (in the sense discussed above, cf. note 2). Clearly, a person's social class is not an inherent feature which is apparent by either visual or tactile means.

A much more satisfying treatment of animacy classes is given in Denny (1976). Denny suggests that the motivation behind all classifier systems is primarily a functional one. Classifiers "communicate a few especially important classes that objects fall into by virtue of the way we interact with them" (Denny 1976). The animacy distinctions within the society, he claims, are made because members of the society must act differently according to the social class (or kinship relation) of the person with whom they are interacting. Classifying people differently picks out this distinction[5]. His idea receives some support from the fact that languages which have classifiers based on social rank are typically spoken in highly stratified societies (e.g. Vietnamese,

Burmese).

Denny (1976) points out that even inanimate classes are ultimately grounded in our interaction with the objects. "Whereas 'a river is a river is a river', one can by changing classifier convey some particular kind of interaction with a river [cf. Table 2]" (Denny 1976). Tables are most often classed with two-dimensional objects because we interact with their surface. This perspective not only explains what classifiers are "good for", but also the motivation for which feature a language (conventionally) chooses as salient for classification.

Denny (1976) claims that there are (inanimate) classifiers based solely on functional interaction, i.e. in which the function of an object is the only basis for its classification.

Burmese

the	clothing for the body (not head or footwear)
si	means of transportation

Gilbertese

kai	trees, plants, land sections, fish hooks (glossed as 'means of subsistence')

The importance of these examples is not only that the classes fall outside the list on Table 1, but that they are not based at all on inherent characteristics of the objects being classified. They appear, like animacy classes, to be the strongest kind of counterexample to a cognitive analysis.

The weakness of Denny's social/functional approach is the stronghold of a cognitive analysis, just as his theory succeeds where the cognitive analysis is weakest. Allan (1977) restricts the set of possible systems, but Denny (1976) brings back cultural relativity in full force. There is in principle no restriction on functional classes, since there is no restriction on possible cultural functions[6]. In order to integrate the two different views of classifiers, and gain the advantages of both, we have to explain why the properties on Table 1 are (at least frequently) associated with functional interaction. The most obvious suggestion is that Table 1 properties are the only ones which determine how we interact with objects.

Actually, this solution does not seem totally unreasonable. The shape and material consistency of an object are obviously important to the use(s) to which it is put. On the other hand, there are no cases where our interaction with an object is different depending on its color (except, I suppose, stoplights), so there are no classifers based on that feature. Another indication that we may be on the right track is given by Plank (1980), who claims that the properties relevant for classification are also the only semantic features on the basis of which verbs can select their objects. For example, the

TABLE 3. Jacaltec Inanimate Classifiers (Craig 1986b).

no?	animal	metx'	dog
te?	plant	ixim	corn
		tx'al	thread
		tx'an	twine
		k'ap	cloth
ch'en	rock	atz'am	salt
ha?	water		
ka?	fire		

English verbs eat and drink differ only in the consistency of the object consumed -- and consistency is on Table 1.

Craig (1986b) provides an important clue to the link between cognition and functional interaction in her analysis of the classifier system in Jacaltec, a Mayan language. Craig explored the quite reasonable idea that two different modes of classification -- a classifier system and a folk taxonomy -- might be related. She found that classifiers in Jacaltec serve to create "a magnifying glass effect" on important sections of the folk taxonomy. The biological domains which are most functionally significant to the community are singled out by their own noun classifiers. The important features of the Jacaltec system can be seen on Table 3.

The set of "physical interaction" classifiers in Jacaltec can be divided into two types: general and specific, corresponding to the left- and right- hand columns of Table 3 respectively. "A specific classifier can...be said to correspond to an object which is naturally in a relation of inclusion...to one of the general classifiers, but has come to function as head of a class of its own" (Craig 1986b). So while a single classifier (te?) covers most plants, corn, in all its varieties, has a distinct classifier (ixim, homophonous with the noun 'corn'). Similarly, in the animal kingdom Jacaltec has a general animate classifier (no?), but dogs are classed separately (metx'). Craig (1986b) provides ethnographic evidence that dogs and corn are important cultural commodities for the Jacaltec. The classifier for each noun refers to the category which is superordinate (i.e. one level up the taxonomy) to the category of the classified object. What is interesting is not only that classifiers increase in the culturally important areas, but also that the most functional, most frequently occurring classifiers correspond to the basic level of the taxonomy.

To see the significance of the Jacaltec data we need to think about what the work on folk taxonomies and on basic level objects in general has told us. Brent Berlin and his colleagues have studied the ways in which different cultures view the biological order of the world. Their main method of study is to look at the lexicon of the languages spoken by these cultures to see how they named the species, orders, and sub-species around

them. They found that languages always develop (single morpheme) words first for the genus level, and that it was also at this level where the folk taxonomy was most similar to the accepted scientific one. The explanation offered by Berlin (1972) was essentially a cognitive one. The level of genus, he speculated, was the level at which a person could most easily identify a member of the category by visual cues. This is the level at which the basic discontinuities of nature are most easily perceived. Differentiation into species often requires a closer look, and at higher levels of the taxonony, the similarities are less marked.

Later work by the psychologist Eleanor Rosch and others has confirmed that there is a "basic level" of classification in several domains at which the number of co-occuring features is maximized:

> "In taxonomies of concrete objects, there is one level of abstraction at which the most basic category cuts are made. Basic categories are those which carry the most information, possess the highest category cue validity, and are, thus, the most differentiated from one another" (Rosch et al. 1976).

One of the main characteristics of the basic level objects is that they are "the most inclusive categories for which a concrete image of the category as a whole can be formed." Also, there tends to be a generalized motor program associated with interacting with the class as a whole. So, for example, chair is a basic level category while furniture is superordinate. Rosch's experiments have shown that it is hard to create and to identify a generalized image for pieces of furniture, but easy for chairs. Furthermore, we know how to interact with any sort of chair, but we need to know what kind of furniture we are dealing with before knowing whether to sit on it or store our clothes in its drawers. At the basic level, in other words, form and function are tightly integrated.

The interesting thing about Jacaltec is that the specific classifiers refer to the basic level while the associated noun refers to a subordinate level of the taxonomy. This means that the classifier preserves the image schematic properties of the basic level which permit a generalized program for interaction with the items in the class. This is precisely the function which Denny (1976) suggested as the motivation for classifiers in general, i.e. to set up classes of objects (or persons) with which we interact similarly. Table 1, meanwhile, shows that the basis for these functional classes is primarily image-schematic. The psychological research into basic level objects provides the link between these two different perspectives -- it is the schematic image which permits us to develop a generalized interaction with the class (a good explanation of why can be found in Tversky 1986).

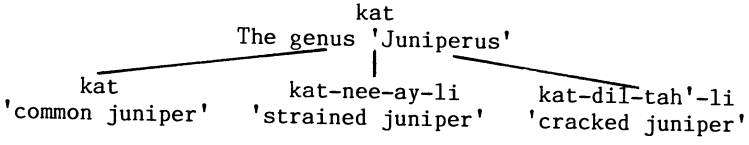
My interpretation of the Jacaltec facts is that specific classifiers developed before the general ones, in those semantic domains which have a high degree of lexical differentiation. In fact, I claim that the first classifiers in all languages arise as the result of lexical expansion, in the following way. Berlin (1972) showed that languages first lexicalize basic level categories of taxonomy. There are, however, certain portions of the taxonomy with which the culture has close contact, and more specific lexical distinctions are needed within those domains[7]. Berlin (1972) found that languages respond to this need in a very general way, and gives a detailed picture of what happens.

> "Situations of social intercourse may arise whereby one one must be able to linguistically differentiate the type-specific category from its contrasting neighbor(s). The linguistic process by which this contrast comes to be indicated is quite general. Invariably, the type-specific will be modified with an attributive-like expression" (Berlin 1972).

In other words, specific (i.e. subordinate) level nouns will contain the generic (i.e. basic) level term, plus some modifier.

As a concrete example, consider the classification of juniper bushes in Navaho. At an earlier stage, Navaho had a single word for all species of juniper (kat). Speakers, however, often needed to distinguish between three types of juniper in the area, and the language developed a lexical distinction.

Navaho (Berlin 1972)



Like the English glosses, each specific term has the generic level term as its root. Because the morpheme kat occurs in all of the specific terms, it may be reanalyzed as a classifier, as ixim has in Jacaltec. The lexical structure of Navaho juniper terms is parallel to that of Jacaltec corn, except that the genus level term in Jacaltec has become a classifier.

Berlin (1972) found that it is very common for the prototypical species to inherit the generic term without modifiers, as in the example. The specific term for the central category of the genera is homophonous (or polysemous?) with the generic term. For a language that develops classifiers by this process, these findings predict that early classifiers should be homophonous with the central member of the class it picks out. This prediction is borne out by several classifier languages, including Jacaltec. As noted above, the classifer ixim is

homophonous with the noun 'corn'. Of the twenty-four classifiers in Jacaltec, twelve are homophonous with nouns that are still in use. Of the rest, two are shortened versions of nouns and six are compound forms. Only four classifiers are "not associated with any free nominal form" (Craig 1986).

There are a number of facts which lead me to believe that this basic level analysis can be extended to to other languages. First, the homophony that we find in Jacaltec between noun and classifier is very frequent. Because of this, it is often difficult to distinguish the two types of morphemes. Downing (1984) notes this difficulty in the investigation of early Japanese classifiers.

> "The problem of distinguishing classifiers from...nouns ...arises even in the most comprehensive inventory of indigenous eighth century classifiers available...where many forms...seem more noun-like than classifier-like. The line between classifiers and nouns is still difficult to draw."

My theory also predicts which nouns will tend to become the first classifiers. The hypothesized basic level origin of early classifier morphemes indicates that we should not find languages with classifiers for superordinate (or subordinate) parts of taxonomies without having them for the basic level. An indication that this prediction might be borne out is found in Adams and Conklin (1973). They note that very few languages have classifiers at the level of biological kingdom (i.e. one which classifies all (and only) plants or animals). Berlin (1972) discovered that lexical nouns for these superordinate levels of the taxonomy are rare as well, appearing only after a language has developed an extensive system at both the basic and subordinate levels. It appears that the frequency of classifiers at various levels of biological taxonomy mirrors the frequency of nouns, presumably for the same reasons.

Most convincing, perhaps, is that wherever the etymology of a classifier can be traced back to its source, that source is invariably a basic level noun. For instance, the Ojibway classifier onak, used for modes of transportation, derives from the word 'boat'. And shape-based classifiers, which have the least obvious functional motivation, derive with fair regularity from plant terms.

> "The three basic shapes of long, round, and flat...are by far the strongest metaphors which occur in the numeral classifier construction...[and] it is obvious that the plants are the source of this metaphor" (Adams and Conklin 1973).

An example is the Malay classifier for two-dimensional (long) objects, derived from a noun meaning 'bamboo'. The

relationship between this important taxonomic domain and shape-based classifiers suggests to me that a system like Jacaltec's underlies many more firmly established classifier systems. The 'sketchier' shape-based noun classes result when the classifier system is expanded to new nouns on the basis of conventional imagery. Over time the classes lose their functional homogeny, but retain important parts of the schematic image.

In a language like Japanese, on the other hand, where Denny (1979) found noun classes based on function rather than shape, I would claim that as the system expanded, speakers classified new nouns on the basis of similar function rather than similar appearance. Even today Japanese speakers prefer a functional basis of classification. Matsumoto (1985) found that Japanese speakers (including children acquiring the classifier system) tend to classify a noun on the basis of its function rather than its shape when it could be categorized either way.

My basic position, then, is that the functional and image-schematic coherence which we find in the world's classifier languages is a result of the origins of noun classes in basic level categorization. Since cultural relativity and semantic opacity are introduced only through language-specific "chaining principles" (cf. note 3), we should expect that the prototypical members of noun classes should remain fairly stable and preserve the initial system. As a result, we don't need detailed historical studies to test the hypotheses which I introduce in this paper. We can look for evidence of the basic level in existing systems. Zubin and Kopcke (1986) show how such evidence can be found even in a completely opaque system like German gender.

FOOTNOTES

1. Some examples of non-inherent English "classifiers":

two loops of rope	three bundles of string
a piece of paper	a kind of mammal

The "classifier" in each case refers to a temporary state of the associated noun. For further discussion, see Allan (1977).

2. That is, e.g., consistency is never the sole criteria for class membership. However, two "round" classes might be distinguished from one another by consistency.

3. Actually, finding a class whose members all HAPPEN to be green would not be a counterexample. The claim is that the greenness of the items would not be the basis for inclusion in the class. We might, for example, find a class of copper things (based on feature 1c) all of which are green.

4. That is, Table 1 features are used to construct a "background model" in the sense of Lakoff (1986), which is supplemented by language-specific "chaining principles" which recognize the role of conventional imagery. The analysis of Dyirbal in Lakoff (1986) shows how effective this approach can be.

5. However, this does not account for the fact that sex is never used as a primary discrimination. Very few societies lack a difference in the social roles of men and women.

6. At least Denny (1976) does not discuss any.

7. This expansion is caused by two simultaneous processes. First of all, close contact with certain areas of the taxonomy makes it possible for members of the culture to identify different species (rather than different genera) through a gestalt image. Furthermore, the contact results in a functional differentiation between species. The interactive motor program associated with the different species may begin to diverge, in essence shifting the basic level from the generic to the specific.

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Paths Through Different Domains: A Cognitive Grammar Analysis of Mandarin Dào

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0. Introduction

In Mandarin, the morpheme(s) dào (到) has a broad range of uses. While one of the purposes of this paper is to show that it is not really possible to give a finite list of distinct meanings or senses, certain prototypes can be recognized and described in the semantic space covered by dào. These include the verb dào$_V$ 'to arrive (at)':

1. Tāmen kuài yào dào Niǔyuē le.
   they soon will arrive-at New York CRS
   They'll soon reach New York.

the locative-goal dào$_L$ 'to', which may be either a preposition or a resultative complement[1] (RC) depending on whether it immediately follows the verb or not:

2. Tā zǒu -dào xuéxiào. (RC)
   s/he walk-to school
   S/he walked to school.
3. Tā bǎ shū diū -dào Zhāngsān-nèibian. (RC)
   s/he BA[2] book toss-to Zhangsan-there
   S/he tossed the book to where Zhangsan was.
4. Lǐsì kāi -le nèi bù chē dào L.A. (PREP)
   Lisi drive-PFV that CL car to L.A.
   Lisi drove that car to L.A.

the achievement suffix dào$_A$, another RC:

5. Āměi mǎi-dào-le nèi běn juébǎn de shū.
   Amei buy-ACH-PFV that CL out-of-print DE book
   Amei managed to buy that out-of-print book.

and, finally, the extent suffix dào$_E$, also an RC:

6. Bàba lèi -dào huà dōu shuō -bu -chū-lái le.
   Dad tired-EXT speech even speak-cannot-out-come CRS
   Dad is so tired that he can't even talk.

Most linguists who have considered some or all of these various uses of dào have either implicitly or explicitly considered them to be distinct morphemes with little or no semantic relation to each other (for example, Chao (1968), Cartier (1972), Thompson (1973), and Li and Thompson (1981)). Teng (1977) is the only scholar I know of who has ascribed a unified meaning

to the various non-verbal uses of dào and, furthermore, tried to relate them to the meaning of the verb. He suggests that they all have the meaning: "The theme comes into contact with the goal, in a situation of movement" (p. 7). He notes that the motion is not always physical but can be mental, perceptual, emotional, or involve "searching, reaching out". While this comes very close to describing the situation at the most schematic level, many of the uses of dào contribute more to the meanings of the sentences they occur in than this highly schematic description provides. Furthermore, in some of the senses, notably one variant of $dào_E$, there is no objective motion or change in the scene portrayed, only subjective motion in the way the speaker-construer accesses part of the scene.

The present analysis will try to provide a unified account of dào, in the sense of Lindner (1982). Neither a single high-level schematic meaning, nor a set of unrelated meanings will do justice to the relationship between the multiple senses of dào. Rather all the senses will be represented by schematic characterizations related in a network, with clusterings of closely related senses producing prototypes, these prototypes related to each other at various higher levels of schematicity, and a number of senses as extensions from these prototypes. Some of these extensions fall close to a borderline between two prototypes so that it would be hard to describe them as examples of one or the other. The four variants named above are the basic prototypes.

The present work makes extensive use of the framework known as Cognitive Grammar as elaborated in Langacker (1982a, 1982b, 1984, 1985, 1986a, 1986b, 1986ms, in press a, in press b) because it provides a set of conceptual and representational tools that allow the detailed semantic description of individual uses, while at the same time permitting their relationships to be explicitly recognized. Because of space limitations, a summary of the framework will not be given and an acquaintance with the framework is presupposed. However, attempts will be made to briefly explain technical terms as they are introduced.

1. $Dào_V$

The prototypical sense of the verb $dào_V$ presupposes the motion of an object through some extent of physical space and profiles the final transition to its destination. As such the domains of space and time figure prominently in the base (the minimal structure presupposed in designating the meaning of a morpheme), which consists of a sequence of locative states of the trajector (the conceptual analog of the gestalt concept of "figure", hereinafter designated TR) each located at some point in time. Since motion of the object along an extended path before its arrival at the destination is saliently presupposed (one cannot have the conclusion of a journey without the journey), it is represented in the base; however, it is merely the last few

locative states that are profiled (i.e. that dàov actually designates). Fig. 1 shows the schematic representation of dàov.

The double-headed vertical arrow on the left schematically represents a dimension or combination of dimensions in physical space. The arrow at the bottom represents conceived time (time as conceived by the speaker-construer). The small circles represent the mover, or entity in motion, at different points in time. Because motion is one of the major factors in determining whether some substructure within a scene is selected as the figure, it is natural for this entity to be selected as the TR of the relation. The oval at the bottom represents the region at the end of the path, which serves as the landmark of the relation (the "ground" in gestalt terms, referred to as LM for the rest of this paper). The LM of dàov must either be an inherent locative, that is, a noun representing a thing which constitutes a sufficiently large region of physical space to contain the TR (e.g. Táiběi, xuéxiao 'school') or a noun phrase with a locative suffix attached to the head noun, the locative suffix referring to a region of physical space defined relative to the object referred to by the noun it attaches to (e.g. Zhāngsān-nèibian 'Zhangsan-there', zhuōzi-shang 'table-on'). The oval is intended to suggest this larger, setting-like thing. The dotted lines are correspondence lines which connect different representations of the same entity at different points in space and time. Boldface indicates profiled aspects of the base, or what the morpheme is actually designating. Here, only the last two states are shown in boldface, along with the corresponding portion of the time line, to indicate that only the final, momentary transition into the destination is being designated or profiled by dàov.

There are variants of dàov that select domains other than physical space:

7. Xīnnián dào -le.
   New Year's Day arrive-PFV
   New Year's Day has arrived.
8. Tā tǐwēn yǐjīng dào -le yì bǎi dù le.
   he temperature already arrive-PFV one hundred degrees CRS
   His temperature has already reached a hundred degrees.
9. Shíyóu de jiàqián yǐjīng dào -le zuì dī le.
   oil DE price already arrive-PFV most low CRS
   The price of oil has already reached its lowest.
10. Bìngrén de qíngkuàng yǐjīng dào -le hěn yánzhòng le.
    patient DE condition already arrive-PFV very serious CRS
    The patient's condition has already gotten very serious.

Here change of some property of the TR is metaphorically represented as movement along some ordered dimension, and dàov profiles the transition to the final state, represented as a goal of motion.[3] The schematic representations of the semantic structure of these variants would be identical with Fig. 1, except

that the vertical arrow would be relabeled with the appropriate property name (temperature, price, degree of sickness etc.).

2. Dào$_1$

As noted in the introduction above, dào$_1$ can occur either as a preposition, as in (4), or as a verb-suffix (in particular, a resultative complement), as in (2) and (3). The base in these cases is the same as the base of the verb dào$_V$ in its prototypical locative sense. Like dào$_V$, dào$_1$ also profiles the last few stages of a more extended path, but unlike the former, it does not profile time, but rather a complex stative, like the path designating prepositions in English (e.g. 'to'). A complex stative profiles a set of states which cannot consistently be viewed as coexisting at the same time, i.e. an object being in several distinct locations. However, it does not profile time; it does not portray the object as in motion. The distinction between a process and a complex stative is analogous to the distinction between viewing a movie of a bouncing ball and looking at a time-lapse or superimposed photograph of the same bouncing ball. The temporal profile in sentences containing dào$_1$ comes from the main verb; however, the fact that only the last few states of the path are profiled in dào$_1$ restricts the extent of the temporal profile of sentences that contain it. The schematic representation of dào$_1$ is given in Fig. 2.

Dào$_1$ and the preposition zài form a contrast set. Both may introduce a locative noun phrase that is construed as the location of a mover-theme at the end of its path. However, zài merely profiles the final state, while dào$_1$ profiles the final stages of the path.

Zài, but not dào$_1$, can occur with certain imperfective verbs with meanings extended from perfective verbs meaning 'assume a position' or 'put something into a location'. The imperfective verbs profile the continuation of an object in the position or location through time. Examples are guà 'to hang, to be hanging (intr.)', tiē 'to be fastened, stuck to something', zuò 'to be seated', zhàn 'to be standing', tǎng 'to be lying down', and tíng 'to be parked':

11. Bāiuntú guà -zài/*-dào qiáng-shang.
Eight-stallion-painting hang-at /*-to wall -on
The eight-stallion-painting is hanging on the wall.

If my claim that zài profiles a single state while dào$_1$ profiles a path is correct, this restriction would be expected, since imperfectives profile a continuation of a single state through time, and therefore do not provide a set of distinct locative states for dào$_1$ to map onto.

Dào$_1$, but not zài, cannot occur with verbs that either emphasize long paths or continued input of energy or effort along a path, e.g.: jì 'to mail', kāi 'to drive (car)'(long path); tuī

'to push', lā 'to pull' (effort); zǒu 'to walk', pǎo 'to run', bān 'to move something somewhere)'.

With many verbs that profile motion, either dào$_1$ or zài may mark the goal; however, there is a clear contrast in meaning depending on whether dào$_1$ or zài is used. For example, with the verb diào 'to drop, to fall', zài implies a short distance, whereas dào$_1$ implies a longer distance:

12. Tā bǎ shū diào -zài/?-dào zhuōzi-shang.
    s/he BA book drop -at /?-to table -on
    S/he dropped the book on the table.
13. Tā bǎ shū diào ?-zài/-dào dìshang.
    s/he BA book drop ?-at /-to ground
    S/he dropped the book on the ground.

With diào, dào$_1$ can also suggest a fall that is not along the flow of gravity:

14. Tā diào -zài/-dào shuǐ -lǐ.
    s/he fall -at /-to water-in
    S/he fell into the water.

With dào$_1$, (14) can describe either a long fall, e.g. from a helicopter, or emphasize the horizontal component of a fall over the side of a boat or dock into the water.

With verbs of placement (e.g. fàng 'to put') and displacement (e.g. rēng 'to throw') there is an emphasis on effort with dào$_1$:

15. Lǐsì bǎ shū fàng -zài/-dào guìzi-shang.
    Lisi BA book put -at /-to shelf-on
    Lisi put the book on the shelf.

With dào$_1$, the sentence suggests that the shelf was high and hard to reach; with zài there is no such implication.

(16) makes very explicit this correlation of dào$_1$ with effort:

16. Lǐsì fèi -le hěn dà de lì cái bǎ
    Lisi exert-PFV very great DE effort only-then BA
    Lisi had to exert himself to get the fan onto the
    diànshàn fàng ?-zài/-dào zhuōzi-shang.
    electric fan put ?-at /-to table -on
    table.

Both fèi-le hěn dà de lì 'used a great deal of effort' and cái 'only then, only with that' explicitly refer to the effort needed, and dào$_1$ is preferable to zài in these sentences.

What is it that unites the sense of distance, as in examples (12), (13) and one interpretation of (14), the sense of horizontal motion in the other interpretation of (14), and the sense of effort in (15) and (16)? They all seem to involve a sense of

deviation from an expected position. When the deviation is in the direction of the flow of gravity, movement through a large distance is required to make it sufficiently salient to warrant explicit recognition with dào$_L$ rather than zài. When the deviation is horizontal, a smaller deviation is sufficient, and when the deviation is seen as requiring effort, a very small distance is sufficient.

3. Dào$_A$

The achievement suffix dào$_A$ profiles the transition of the theme of a transitive process into the sphere of interaction/influence of the trajector of that transitive process. Unlike the previous variants of dào, dào$_A$ does not saliently presuppose an extended path; the only remnants of the path-like notion of dào are a sufficient number of states to portray the theme as not in the appropriate sphere of interaction at one point in time and then in it. Fig. 3 gives the semantic representation of dào$_A$. The bold-faced rectangle on the left is similar to the semantic structure of dào$_L$ in that 1) it construes a complex stative, making reference to time, but not profiling it; 2) it profiles its trajector as being outside some large setting-like region at one point in time, and inside it at another. It is different from dào$_L$ in that 1) the landmark is not a region in physical space but rather an abstract region defined relative to the trajector of the main verb; 2) since an extended path is not present even in the base, the sense of movement through some dimension is not salient, hence the lack of a vertical arrow in the representation of dào$_A$; and finally 3) since the domain of the abstract sphere of interaction that constitutes the landmark of dào$_A$ and the entity with respect to which the particular region within that domain is defined both make reference to another process, that process must be represented in the base of dào$_A$. The non-boldface rectangle on the right represents that process and correspondence lines establish the appropriate identifications of its substructures with those of the profiled states in dào$_A$. (The wavy arrow for conceived time is intended to schematically represent the perfective nature of the process, i.e. that there is change in the state over time.)

The behavior of dào$_A$ with the causative nòng 'to make, cause' provides evidence for my choice of TR (i.e. the direct object of the main verb). Nòng when followed by a resultative complement portrays the subject as acting on the object in some unspecified way so as to bring about a change in the object: nòng-qīngchu 'make-clear: to make (something) clear', nòng-zǒu 'make-away: to make (something) go away'. Nòng-dào means 'to get, obtain'. If this is parallel with all the other uses of nòng with a resultative complement, and there is no reason to believe that it is not, dào$_A$ must be profiling the change of state of the object. Just as clearly the concept of possession of the object by the subject is being given by the dào$_A$. While dào$_A$ does not always

profile the sphere of physical possession, this seems to be the prototype from which the other senses are extended. My primary informant says that the image most readily associated with this phrase is something coming into the palm of one's outstretched hand. Here we can not only see the relationship of dào$_A$ with the verb sense of 'arrival', but we also have the prototypical case of possession, physical possession. The object also becomes accessible to the senses (because of its proximity) and available for use or manipulation. All of these senses are manifested by dào$_A$ in its use with various verbs.

With the following verbs, dào$_A$ profiles the object entering into the possession of the subject, either physical possession or the more general sense of socially legitimated control of something: mǎi 'to buy', zū 'to rent', jiè 'to borrow', lǐng 'to collect (salary)', qiǎng 'to grab, steal', jiǎn 'to pick up', dé 'to obtain', shòu 'to receive', jiē 'to catch' and ná 'to grasp'. With these verbs, adding dào$_A$ has the effect of making the successful attainment of the goal seem either difficult, as in:

17. Wǒ zhǎo -le hěn jiǔ cái mǎi-dào-le nèi běn
I search-PFV very long only-then buy-ACH-PFV that CL
I searched for a long time before I managed to buy that
shū.
book
book.

or surprising or unexpected, as in:

18. Wǒ língrán jiè -dào-le nèi bǐ qián.
I surprisingly borrow-ACH-PFV that CL money
Surprisingly I managed to borrow that money.

Again we have the sense of effort or deviation from the expected in a rather different variant of dào from the one considered in the last section.

With the following verbs, dào$_A$ profiles the transition of the object into the sphere of experience (conceptual, perceptual, emotional or some combination of these) of the subject: kàn-dào 'to look at-ACH: to see', tīng-dào 'to listen to-ACH: to hear', gǎnjué-dào 'to try to feel, to feel (agentive)-ACH: to feel (passive experience)', xiǎng-dào 'to think-ACH: to think of something', cāi-dào 'to guess, try to guess-ACH: to guess correctly', mèng-dào 'to dream-ACH: to dream of'.

With other verbs, dào$_A$ profiles transition into other spheres which, nevertheless, are related to the spheres of possession or experience: qǐng-dào 'invite-ACH: to get (e.g. a good speaker, teacher, employee) as a result of inviting', zū-dào 'rent-ACH: (in addition to being used of a tenant managing to rent an apartment, this can also be used of a landlord) to manage to rent to, get (a good tenant)', jìsuan-dào 'calculate-ACH: to take into consideration in one's calculations', kǎolǜ-dào 'consider, think

over-ACH: to take into consideration'. The latter two shade into a more abstract domain still, the domain of accessibility or usability. The following verbs seem to refer to this domain, portraying the transition of the object into a sphere of accessibility with respect to the process portrayed by the main verb: chī-dào 'eat-ACH: manage to eat (the object becomes available, immediately accessible for eating)', hē-dào 'drink-ACH: manage to drink, get the opportunity to drink (and actually drink)', yòng-dào 'use-ACH: to get around to using', wán-dào 'play-ACH: to get the opportunity to play (and actually play)'. Another abstract domain related to experience is referred to in tí-dào 'mention, raise a topic-ACH: to suggest for discussion, bring up somewhat unexpectedly'. Here $dào_A$ profiles the entrance of the topic into the universe of discourse.

4. $Dào_E$

There are certain uses of dào which are basically adverbial, that is they profile a property of the process designated by the main verb. Figs. 4.a and 4.b give the semantic structures of two variants of $dào_E$. The relation profiled by $dào_E$ is defined on a metric imposed on some dimension; that is, the states of the dimension (usually some abstract property, but sometimes space or time) are ordered and some direction is implied by reference to some norm on that dimension (the dimension is represented by the vertical arrow in each diagram and the calibrations on it are intended to suggest its organization into a metric).

There are two variants on the extent $dào_E$. One portrays the progressive positions through time of the relational trajector along the dimension toward some particular point. Fig. 4.a shows the semantic structure of this variant of $dào_E$. The vertical arrow on the left represents the dimension, with the marks meant to indicate that it is ordered and oriented into a metric. The TR is some relation, here schematically represented as a circle connected to a square. The relation will be elaborated by the main verb. Only the last few states are profiled, as only the final transition to the final state is asserted. This version occurs primarily if not exclusively with perfective verbs that saliently refer to some quantifiable dimension:

19. Tā pǎo-dào zuì kuài le.
he run-EXT, most fast CRS
He reached his highest running speed.
20. Tā zhōngyú shuì -dào hěn shūfu le.
he finally sleep-EXT, very comfortable CRS
He finally got into a comfortable sleep.

In these examples, the relation represented by the main verb is portrayed as changing through time, either in the course of a single event (e.g. he is running faster and faster until he reaches his fastest speed, where (19) profiles the final increment

of speed) or over a more extended period of time, for example, a course of training for competition. (20) suggests that the person has turned this way and that until finally getting to a comfortable state of sleep and profiles his final transition into that state. Here the normally imperfective process of sleeping is being viewed as a changing state, changing in the soundness of the state achieved, which is being measured in terms of the comfort of the subject.

There is another version of dào$_E$ which does not portray any change through conceived time, even in the base. Consider the following examples:

21. Tā lèi -dào huà dōu jiǎng-bu -qīngchu le.
    s/he tired-EXT$_1$ speech even speak-cannot-clear CRS
    S/he's so tired that s/he cannot even speak clearly.
22. Tā gāoxìng-dào yǎnlèi dōu liú -xià -lái le.
    s/he happy -EXT$_1$ tears even flow-down-come CRS
    S/he's so happy that s/he's crying.

This variant is represented in Fig. 4.b. In these examples, dào$_E$ merely asserts that the relation profiled by the main verb, typically an imperfective relation expressed by what are traditionally called "stative verbs", is located at a certain point on a metric dimension. There is no implication that the relation traversed the dimension in order to get there. On the other hand, there is a sense of surprise at or emphasis on the degree or extent conveyed by the use of dào$_E$, as we can see by comparing these with sentences with the de extent marker:

23. Tā lèi -de huà dōu jiǎng-bu -qīngchu le.
    s/he tired-EXT$_2$ speech even speak-cannot-clear CRS
    S/he's so tired that she cannot even speak clearly.
24. Tā gāoxìng-de yǎnlèi dōu liú -xià -lái le.
    s/he happy -EXT$_2$ tears even flow-down-come CRS
    S/he's so happy that she's crying.

The English translations do not this bring out, but my informant felt a clear contrast between the two sets of sentences with the former putting more emphasis on the extent or suggesting the unlikelihood of the imperfective process having this property. We can make sense of this subtle contrast in terms of the concept of subjective motion.

The point on the scale at which the trajector is located is portrayed as being the endpoint of subjective motion. Stated at the most intuitive level, the speaker-construer traces mentally along some abstract dimension (e.g. happiness) from some norm toward some positive extreme until it reaches the point which represents the actual degree of happiness being asserted by the sentence. Put more analytically, so that we can see the relationship between this version of dào$_E$ and the other versions of dào, the speaker-construer successively activates the

conception of points on that metric from the direction of the norm toward the profiled point on that dimension, the actual degree or extent at which the main verb is asserted to be. The extension of the concept of motion from the verb dào$_V$ to the extent dào$_E$ is thus an extension from objective motion through physical space, to subjectively construed motion along a (typically abstract) dimension with a metric imposed on it. What corresponds to the locative states in the dào$_V$ are a sequence of construal relations between points along the dimension where the trajector relation might be located and the speaker-construer. Each state portrays some point on the metric that the property referred to by the main verb could be occupying, and locates it within the awareness of the speaker-construer. There are thus parallels with dào$_A$ when the sphere of experience is referred to (e.g. kàn-dào 'to look at-ACH: to see'). The fact that the process is profiled as being located at the final point on the metric accessed gives a sense of deviation from the expected location on the metric and, hence, the sense of emphasis on extent or surprise noted above. This motion is not conceived of as occurring in real time objectively construed, but rather processing time subjectively construed (the capital T labeling the horizontal arrow represents processing time). The speaker also does not construe himself objectively but rather off-stage, in the background. The points on the metric are portrayed as being progressively presented to his mind's eye, but he is viewing them through these eyes, and he himself is therefore not objectively portrayed. This constitutes the base and what is profiled is the location of the relation profiled by the main verb (again represented schematically by the configuration of a circle connected to a square) at the point on the dimension designated by the landmark of dào$_E$.

5. Conclusion

As can be seen from the many examples in this paper, the morpheme dào has a vast variety of senses, some quite distinct, but all united by a family resemblance. They differ on a number of dimensions, though sometimes similarities cross-cut major differences (effort and unexpectedness are themes running through the different variants). All involve transition of something to a "location" of sorts. Typically this transition takes place in conceived time, although the non-verbal variants do not profile this change in time and therefore cannot be a clausal heads. In the case of the second variant of dào$_E$, the transition is not even construed as occurring in conceived time, but rather reflects backgrounded awareness of the time course of the mental process of "finding" the degree of some property where a certain relation "is". The prototypical sphere or dimension of change is physical space, although even the verb tolerates some variation from this, while the relevant spheres for dào$_A$ and dào$_E$ are rarely physical space. Yet even for these two variants, the spheres or dimensions share properties with the locative prototype. The sphere of

interaction of dàoA, defined relative to the subject, is very much like a region of space defined relative to some person or object and physical proximity often involves interaction. The various dimensions of dàoE are analogous to single dimensions in physical space. The effort portrayed in many of the examples of the first version of dàoE and the mental "effort" of the second version are very much like the energy or effort required to move oneself or something else from one location to another in space.

There are a couple of lessons to be learned from this analysis with respect to the nature of semantic representation. First, while there is a schematic representation that covers all of the variants, it clearly does not include all the meaning that the various lower level variants are contributing to the sentences they occur in. The most schematic characterization (not diagrammed) would represent in its base some entity not at some abstract location at one point in time and at that location at another, and would furthermore profile the latter state. It would not specify (be schematic with respect to) whether that entity was a thing, as with most variants of dào, or a relation, as with dàoE and some versions of dàoV. It would also be schematic with respect to whether the location was fixed at a point on an ordered dimension or simply construed as somewhere within an extended region, whether that region was in physical space or in a more abstract space, whether an extended path through some ordered dimension was specified in the base, whether this path was profiled or not, and if not, whether the states that comprise it are construed as being in conceived time or in processing time. Because the most schematic version is non-committal with respect to so many of the specific characteristics of the lower level prototypes, it cannot account for the details of the semantics of sentences containing them, nor for the sense of native speakers that, for example, two different examples of dàoA with different abstract spheres are intuited as being more alike than either is to dàoV or dàoT, although all are felt to be related. The network characterization of their relationship captures these facts.

The other lesson is not really new: it has been made over and over again in the literature on cognitive grammar. The links between the different variants and subvariants, while being grounded in our experience of objective reality, are not a direct reflection of objective reality itself, as truth conditional approaches to semantics would have. The extension of the domain of dàoA from possession to the visual field is not based on any objective analysis of possession or vision, but rather on human beings' phenomenological perception of these situations and supported by their cooccurrence in basic experiences like receiving something. The remove from objective experience is even greater in the case of the second version of dàoE, where the motion or change referred to in the other senses of dào is realized as a purely subjective motion. In this case, there is no objective basis for the extension at all. It is not merely the perception of structural analogy between two objectively distinct

situations, but, rather, the explicit if backgrounded reference by the speaker-construer to his own act of portraying a situation that serves as the basis for the extension.

* I would like to express my thanks to Ron Langacker, Sally Rice, Leonard Newmark and Ed Klima for their many helpful comments on earlier versions of this paper.

Footnotes

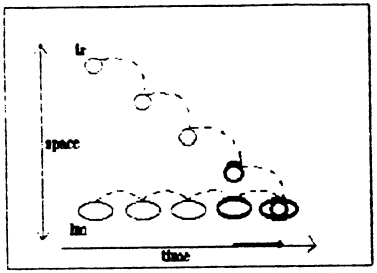
1. The class of resultative complements is defined by the ability to occur with the potential infixes -de- 'can' and -bu- 'cannot' inserted between the verb and the complement.

2. The following is a brief translation of the abbreviations used in glossing the Mandarin examples:

ACH the achievement suffix, dào$_A$
BA the preposed object preposition
CL nominal classifier
CRS "currently relevant state", a sentence final particle distinct from but probably related to the perfective suffix -le. It indicates that the event or imperfective process profiled by the sentence is somehow currently relevant and corresponds roughly to the English "as of now"
DE the nominalizer/modifier particle that typically occurs between nominal modifiers (possessors, adjective phrases and relative clauses) and their heads
EXT$_1$ the extent suffix dào$_E$
EXT$_2$ the extent suffix dé
PFV the perfective suffix -le
PROG the progressive aspect marker zài

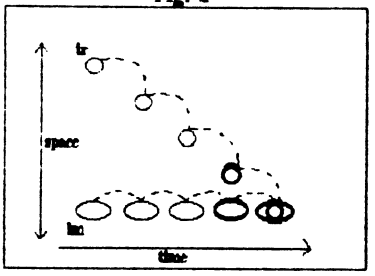
3. Some speakers do not accept, or are highly resistant to, landmarks of dào that are not explicitly nominal. This is true in examples like (9) and (10) above, as well as many of the examples given in the discussion of the extent dào$_E$.

Fig. 1



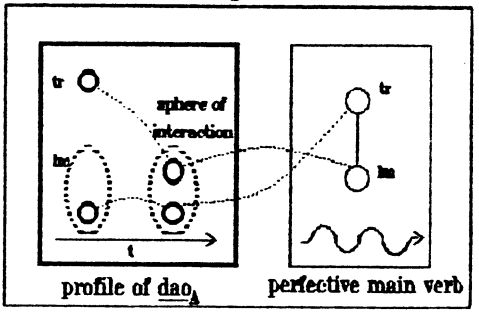
Dào$_V$

Fig. 2



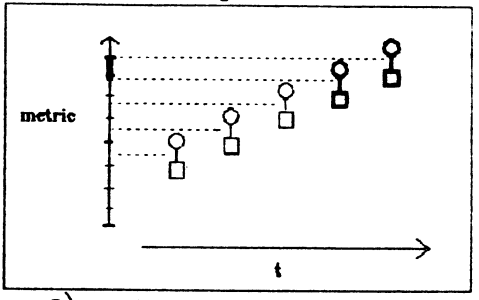
Dào$_L$

Fig. 3



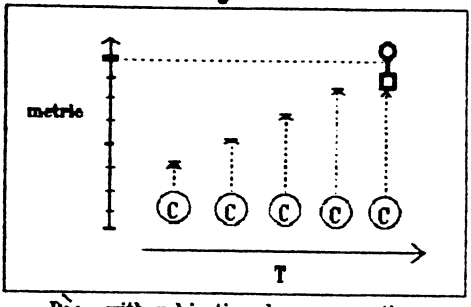
Dào$_A$

Fig. 4a



Dào$_E$ with objective change or motion

Fig. 4b



$\overline{\text{Dao}}_g$ with subjective change or motion

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Towards a Transitive Prototype: Evidence from Some Atypical English Passives

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1. Introduction

This paper provides evidence for the cognitive rather than the syntactic or lexical basis of the English passive, a structure central to the study of grammar in recent years. Passivizability in English is widely assumed to be a reflex of the transitivity of some aspect of the active clause: either of the verb, the verb phrase, or the semantic content of the sentence as a whole. Hopper and Thompson's 1980 paper on global transitivity represents a substantial achievement towards our understanding of this phenomenon. In the wake of this seminal paper, much research has sought to refine their 10 original factors [1] which they propose affect a clause's transitivity (DeLancey 1982, Hopper 1985, and Jacobsen 1985). Some of this research has even suggested a prototype approach to semantic transitivity, but always as a synthesis of the Hopper and Thompson factors and never as a transcendent notion removed from the purely linguistic sphere. I agree that transitivity is something above and beyond the lexical or logical definition: a verb taking a direct object or one sustaining two arguments. But I'll argue that transitivity is not inherent to or derivable from properties of the morphology of the clause as assumed in the Hopper and Thompson model and extensions thereof. The relevant parameters of transitivity are not always objectively given in the content of the sentence per se, but may be imposed from without, i.e., subjectively, by the speaker. Thus, transitivity operates much the way that counterfactuality or hypotheticality are used--as a means of conveying information about the speaker's interpretation of the event in question. Rather than a lexical or grammatical category, transitivity is instead part of the intensional/construal arsenal available to a speaker and employed to organize and communicate something about an event other than content.

I will show that English clauses passivize not according to their satisfaction of the usual constituency requirements, [NP V NP], but rather due to their adherence to a transitive prototype characterizable in conceptual terms. Our ability to form prototypes and assess the relative deviation of items from such prototypes is a productive part of our conceptual system and a natural basis for grammatical organization within any given linguistic community (Lakoff 1977). Hopper and Thompson's 10 components fall short of providing a coherent prototype of a transitive event because their factors are by and large couched in linguistic terms. They seek transitivity in the overt morphology of the clause, in transitive markers, perfective aspect markers, definite articles, etc. These factors do not

always correlate nor do their values (presence or absence) reliably covary within a clause. As such, in and of themselves, they do not enhance our understanding of transitivity as an integrated phenomenon.

For the formulation of a transitive prototype I turn instead to non-linguistic models of real world action and interaction. Langacker (1986b) has discussed two of these models, which he terms metaphorically the *stage model* and the *billiard ball model.* These models describe our conception of canonical events and interactions between entities in the physical world and are even purported to have a developmental basis (Slobin, 1982). We observe events as unfolding against some spatial or temporal setting and we organize events around the interaction of individuated entities which move about and affect one another. Simple folk models such as these about entities moving and changing in time and space and affecting other entities influence to a degree the way we talk about such things. Indeed, these cognitive models can serve as the underpinnings of a transitive prototype. The stage model contributes notions about how we as observers tend to segment or group events into unitary actions among a fixed number of participants acting within some setting. The billiard ball model suggests how one entity's externally or internally supplied energy is translated into movement or force against some other entity and how the two entities do not share equal status. This model thus captures the notion of both movement by one participant and effect of the other.

The two models can be collapsed to yield a schema concerning our observation of two entities interacting withing some setting, a schema similar to the transitive prototype that we intuitively and traditionally make use of. The *prototypical transitive event* can thus be characterized in this non-linguistic fashion: Two entities, which are usually conceived of as being asymmetrically related, are involved in some activity; the interaction between them is unidirectional; because there is movement and effect, contact between the two entities is presumed to take place, with the second entity being directly affected by the contact instigated by the first; finally, the entities are taken to be distinct from each other, from their locale or setting, and from the speaker/observer/conceptualizer. Force-dynamics (Talmy 1985) also play a role in the construal of an event as transitive or not, as does the unique nature of the event--whether it happened once or habitually--and whether or not the effect the action has on some participant involves an internal or external reaction. When aspects of the prototype are missing or skewed by the speaker (for example, when the participants are not well-defined or distinct, or when the action or contact is incomplete or ineffective) the overall transitivity of the clause describing such an event is diminished and the passive counterpart may not be felicitous. This transitive prototype can accomodate sentences coding events that depart from the canon, for example, because the events are construed as transpiring in non-physical space (such as the mental space of

perception or ideation, or in discourse space), as long as notions such as asymmetrical interaction, directed contact, effect, or distinctiveness of the participants are present. I maintain that a cognitive characterization such as the one presented here supplies the essence of a model of transitivity. The degree to which sentences stray from this canonical account is reflected in their transitivity as will be measured by the acceptability of their passive counterparts. Obviously, I do not presume that transitivity is an all or nothing phenomenon. Languages will vary in the degree of departure they will tolerate in an event-coding clause. Furthermore, clauses can be made more or less transitive. When and why a clause reaches some global threshold of transitivity (and passivizes) is a complex problem that I will only begin to address here.

2. The Phenomenon

Two types of clausal patterns will be examined, neither of which are generally elicited as typical transitive exemplars. First, I'll discuss the behavior of sentences featuring prepositional verbs. These fail to meet the standard phrasal requirements for passive because they feature the constituency, [NP V P NP]. Second, I present some imperfective verbs such as KNOW and RESEMBLE which appear in structures meeting the constituency requirements for passive, [NP V NP], but which usually fail to passivize. Most interestingly, many clauses featuring such verbs can be made passivizable through the addition of negative markers, certain adverbials, modals, past tense markers, or more generic nominal participants. These factors are discussed in relation to the transitive prototype, not so much in terms of how they affect the content of the event/clause being predicated, but in the way they affect the construal of the event/clause by the speaker.

2.1. Prepositional Verb Constructions

There are thousands of prepositional verbs (VPPs) in English, verbs to which a preposition has coalesced grammatically and semantically. These verbs are usually initially intransitive, but with the addition of the preposition they are often rendered transitive and passivizable:

(1) a. The widow was spoken to by each of the mourners.
    b. *The citizens of Kiev were spread to by the radioactivity from Chernobyl.
(2) a. The mysterious cargo plane was fired at by the Sandinistas.
    b. *The café was remained at by the couple long after everyone else left.
(3) a. The cabbie was argued with by the bus driver for 20 minutes.
    b. *Elaine was sung with by Ted in the contest.
(4) a. This bed has been slept in again by that flea-bitten dog.
    b. *The living room is exercised in by Mary.

(5) a. *The treehouse was descended from by the boy.
b. *These reports are too contradictory to be generalized from by the committee.
(6) a. *The stool was fallen off by the child.
b. *The family trust can be lived off by Mark once he turns 21.

Most syntactically oriented frameworks call the acceptable (a) sentences in (1-4) "pseudo-passives" or else handle them lexically. By any definition, these constructions present atypical transitive sentences. As (1-6) demonstrate, not all of these complex verbs exhibit passive versions. To a degree, the passivizability of such clauses is dependent on the meaning of the preposition, since most of the English prepositions have spatial and non-spatial senses that can either complement or oppose properties of the transitive prototype. However, the main determination of transitivity for these constructions is dependent on the event/clause's conceived distance from the transitive prototype. Recall that our transitive prototype is characterized in physical world terminology and primarily involves spatial motion. The English prepositional system is also primarily spatial. English prepositions typically define the spatial location or trajectory through some setting that entities take although the prepositions are also applicable across multiple cognitive domains. Due to metaphoric extension, they can define locations or trajectories in non-physical space as well. Moreover, the individual prepositions have inherent semantic properties which allow them to be grouped together in a variety of ways. Hawkins (1984) examined the spatial senses of the English prepositions and proposed one such classification based on whether prepositions described an initiative path (e.g. FROM, OFF, OUT) or a terminative path (e.g. TO, AT, ON, IN) for an entity's trajectory through space with respect to some landmark.

I looked at a corpus of nearly 3,000 VPPs with examples constructed from each of the English prepositions and, not surprisingly, found a strong correlation between preposition type and the passivizability of the entire construction. I propose that to some extent properties of the prepositions echo or induce properties of transitivity for the whole clause. Therefore, VPPs constructed from certain source-oriented prepositions, such as FROM, OFF, and OUT, should strongly resist passive. In my corpus, only a handful of the hundred or so phrasal verbs I found involving these prepositions occurred in sentences which could be made to passivize. On the other hand, well over 60-70% of the nearly one thousand VPPs formed from the goal-directed or contact-oriented prepositions, such as TO, AT, ON, and IN, occurred in clauses that have passive counterparts.

More interesting, however, were the cases in which the same preposition matched with different verbs allowed the variable construal of the prepositional object as participant in some interaction rather than as the setting for some event. As a case in point, compare sentences (4a) and

(b) given above which share similar categorial elements: NP V in NP. IN, recall, marks a terminative path or endpoint and as such is a contact preposition and should naturally bias the VPP constructed from it toward a transitive construal. I repeat these sentences in their active versions:

(7) That flea-bitten dog has slept in this bed again.
(8) Mary exercises in the living room.

(7) is construed as a transitive clause while (8) is construed as intransitive. Very schematically, (8) specifies something about a single participant acting within a setting, whereas (7) specifies something about a participant acting on and affecting an entity which we might otherwise construe as a setting. However, the effect the subject has on the apparent setting in (7) turns the latter into a full-fledged participant of the action. Furthermore, (7) passivizes while (8) does not as (4a) and (b) demonstrate. Since both sentences involve animate agents and inanimate locations, what is it that contributes to the fact that (7) has a passive version, in essence, to the construed transitivity of (7)? Is it some property inherent to SLEEP, SLEEP IN, THIS BED, or even THAT FLEA-BITTEN DOG versus some property lacking in EXERCISE, EXERCISE IN, THE LIVING ROOM, or MARY? By shuffling lexical items and creating new minimal pairs we discover a continuum of acceptability for different passive sentences:

(9) a. *The living room was slept in by Mary.
b.??The living room was slept in by that flea-bitten dog.
c. This bed was exercised in by Mary.

In (9b) and (c), there is something which suggests that "the living room" and "this bed" were affected by the activity in question, either that there are now fleas in the living room or that the bed is completely mussed up. On the other hand, a (nonfamous) person can normally sleep in a living room without disturbing it and so it is usually construed as a setting for such an action; thus the passive (a) clause is unacceptable and the event it predicates is intransitive. We find from these examples that the predication *as a whole* must be taken into consideration in deciding the transitivity of an event since neither the prepositional verb nor the choice of nominals alone licences passive.

There are other minimal pairs involving an identical VPP and agent combination where variation of the post-prepositional nominal is sufficient to skew the construal of the event towards either the transitive or intransitive end of the continuum. Compare (10) and (11):

(10) a. Mary, who needed advice, rushed to John.
b. John was rushed to by Mary, who needed advice.

(11) a. Mary, who needed a rest, rushed to the countryside.
b. *The countryside was rushed to by Mary, who needed a rest.

In both (10a) and (11a), the agent is animate and volitional. Furthermore, RUSH TO appears to conform to our transitive prototype. It involves energetic, directed motion towards some goal or endpoint. The operative difference between these two examples, I believe, lies in the nature of the endpoint nominal. Animacy is not relevant here for determining participant status so much as the *discreteness* or *specificity* of "John" versus the *diffuseness* of "the countryside". Proper nouns usually signal highly individualized entities. Geographic descriptions as a rule do not. The more diffuse or spacious the endpoint is, the less likely it will serve as a *participant* to the action and the more likely it will be construed as a *setting*. Of course, this distinction is not categorical, but a matter of degree. Note the unacceptability of (12), which involves a plural or multiple though still animate object participant:

(12) *All of her relatives were rushed to by Mary, who needed money.

Another example of variable construal affecting passivizability is provided by (13), which has multiple interpretations:

(13) David fought with Bill.

This sentence is ambiguous and can mean either "David fought *against* Bill" or "David fought *alongside* Bill against some unspecified third participant." The *against* reading is conceptually consonant with notions of contact, asymmetrical interaction between co-participants, force-dynamic opposition, and external reaction--notions all derivable from the transitive prototype. Conversely, the *alongside* reading is related to notions of proximity rather than contact, minimal differentiation between participants, and pure movement or action within some setting. Notice in (14) that it is only the *against* reading of (13) that passivizes as this sentence is not ambiguous:

(14) Bill was fought with by David.

I turn now to a different set of passive data in English for which similar transitivity effects obtain.

2.2. Imperfectives

This section investigates the lexical extension of passive for English imperfective verbs. Imperfective verbs are those such as KNOW and RESEMBLE which describe situations that are constant or static through

time. They are distinguished operationally from inherently perfective verbs like HIT on a number of counts. First of all, they need no special interpretation in the simple present tense. In addition, unlike perfectives, imperfectives cannot felicitously take a progressive ending. Imperfectives are also traditionally distinguished in the transformational literature by their inability to take manner adverbials like "carefully." Imperfective verbs were chosen here because they represent atypical examples of transitive verbs. In the Hopper and Thompson approach, they are nonactional, atelic, and nonpunctual and therefore marked by three of the main components of *low* transitivity. I tested sentences containing various imperfective verbs for their passivizability holding constant present tense and the definiteness of third person participants. Those sentences which appeared not to passivize were then subjected to an array of manipulations. These included change of tense, change of definiteness, and addition of adverbs, negative markers, modals or extra context. Many of these factors produce quite tolerable passive sentences, although they initially rank low on the Hopper and Thompson scale. What emerges from the data is a paradox for models which look for transitivity in the overt morphology of a clause: Components that correlate with low transitivity actually enhance the passivizability of many imperfectives. I argue that the transitivity parameters of Hopper and Thompson do not necessarily covary with transitivity because they do not adequately reflect the transitive prototype, adherence to which actually determines a clause's transitivity and passivizability. Instead, many subtle *conceptual* factors may also enter into an appraisal of transitivity. Indeed, grammar and conceptualization are assumed to be inextricably linked, with grammaticization in language being an emergent property of the latter.

As we shall see, the naturalness of a passive construction decreases as the action-effect event specified by the verb and its arguments departs from the transitive prototype. This prototype has the agent and patient participants maximally opposed for some set of *abstract* parameters such as directed movement, energy transfer, or force resistance. The effects of these parameters and insufficiencies associated with models that adhere too firmly to strictly morphological or grammatical determiners of transitivity will be demonstrated in what follows.

2.2.1. Conceptual Imperfectives

Many verbs which I call conceptual imperfectives occur in clauses which resist passive. Some examples are given in (15):

(15) a. *The couple next door is known by John.
b. **Pat's smoking is minded by Sam.

These sentences are rather bad, but they improve slightly in the past tense,

which encourages a more punctual, completed rendering:

(16) a. ?The couple next door was known by John.
b. ??Pat's smoking used to be minded by Sam.

Strangely enough, negativity (a low transitivity component in the Hopper and Thomson paradigm) also enhances these imperfectives as illustrated by the sentences in (17):

(17) a. ?The couple next door is not known by John.
b. ?Pat's smoking isn't minded by Sam.

Certain adverbs also have a demonstrable effect on passivizability. Not surprisingly, adverbs like "completely," "absolutely," "thoroughly," "totally," "entirely," etc., which signal a sense of completion or goal-attainment, behave as transitiving components. Rather unexpectedly, however, adverbs like "barely," "hardly," "scarcely," and "only," which signal *incompletion*, can enhance transitivity as well. Note the effects of these adverbs on the sentences from (15) given in (18) and (19):

(18) a. The couple next door is thoroughly/barely known by John.
b. ?Pat's smoking is completely/scarcely minded by Sam.
(19) a. The couple next door is only known by John.
b. Pat's smoking is only minded by Sam.

The adverb "only" has a much narrower scope interpretation than the adverbs in (18). In (18), the adverbs have scope over the "action" of the verb and specify whether it is partial or complete. In (19), "only" restricts the action of the verb to a particular agent and is otherwise indifferent to the degree of completion of the action. The effect of "only" is to reduce the affectedness of the object by greatly limiting the possible agents or by insinuating, perhaps, that the actual agent somehow deviates from the norm. In either case, the adverb only serves to heighten the degree of differentiation between the participants.

Irrealis mode, reportedly a low transitivity component, also affects passivizability in positive ways. In English, modals encode events as occurring in a non-real or contingent world and should detransitivize a clause. Nevertheless, modals enhance the passivizability of the sentences in (15) given in (20) below:

(20) a. The couple next door should be known by John (since he married their daughter)!
b. Pat's smoking might be minded by Sam (because he's got emphysema).

The modal probably plays a central role here in licensing passive, especially in the past tense. Past tense modals usually foster an epistemic reading. What such modals contribute is either a notion of an event's *potentiality* or its *value*. With epistemic modals, the aspectual character of the event itself remains indeterminate while some abstract scale is superimposed semantically on the scene. The scale represents the evaluation of an event in terms of the possibility of its occurring or in terms of its subjective goodness for some *outside* participant, specifically, for the speaker who utters the sentence. These abstract scales reflect very subtle appraisals of the overall event as performed by the speaker-conceptualizer and may be related to a telic or goal-oriented interpretation, an integral part of the transitive prototype. Similar aspects of the prototype seem to be at play in rendering symmetrical imperfectives more passivizable.

2.2.2. Symmetrical Imperfectives

As discussed above, prototypical transitive events are asymmetrical, unidirectional, and punctual in nature. There is a small subclass of imperfective verbs for which it is rather arbitrary which participant functions as the subject or object in an inherently equivalent and stative relation. RESEMBLE is a fairly symmetric imperfective verb. It is slightly asymmetric in that it takes either chronology or precedence into account in the subjective appraisal, but sentences with this verb nevertheless resist passive:

(21) a. Tommy resembles the milkman.
b. *The milkman is resembled by Tommy.

The passive is better or completely acceptable for RESEMBLE if other aspects of the transitive prototype can be directly invoked:

(22) a. The milkman used to be resembled by Tommy.
b. The milkman isn't resembled by Tommy at all!
c. The milkman couldn't possibly be resembled by Tommy.
d. The milkman is unmistakably resembled by Tommy.
e. Everyone is resembled by someone.

In (22a), the situation is given a more punctual rendering as a completed event. In (b), (c), and (d), the imperfective situation as a whole achieves some endpoint along an abstract scale of possibility as imposed by the speaker/conceptualizer. Here, the *content* of the clause is less important than the *construal* of the clause as a potential event, that is, as a potential instance of resemblance. In (b) and (c), the event is construed as nearly impossible, while in (d), it is completely possible. Such extremes along a subjective goodness-of-fit continuum as a potential event can transitivize

an otherwise intransitive clause. Finally, the (e) sentence with its generic participants is also completely acceptable. To be sure *everyone* and *someone* represent extremes along a scale of potential participant, but I cannot begin to suggest how they interact with the transitive prototype. Let us now move on to a different class of verbs, the configurational imperfectives.

2.2.3. Configurational Imperfectives

This class of imperfective verbs underscores the importance of looking beyond subcategorization for reasons behind the differential syntactic behavior of fairly synonymous verbs. In (23), CONTAIN and OCCUPY appear to be slightly different versions of the same spatial arrangement:

(23) a. The yard contains the swimming pool.
b. The swimming pool occupies the yard.

Yet the passive counterparts of these sentences as given in (24) are not equally acceptable:

(24) a. *The swimming pool is contained by the yard.
b. ?The yard is occupied by the swimming pool.

Because the sentences in (24) *do* differ in grammaticality, one would expect a corresponding difference in the way they construe the same stative containment situation semantically. In fact, there is a difference. OCCUPY suggests that the container (here, the yard) is filled more or less to its boundaries, while the CONTAIN relation fails to convey a sense that the container is filled up at all. Hence, CONTAIN predicates a purely configurational situation without regard necessarily to any sense of completion or boundedness. The presence or absence of this quality of boundedness may be related to Hopper and Thompson's telic/atelic distinction. Note, in any case, that boundedness here is imposed on the sentence as a function of the speaker's subjective construal of the scene and is not objectively marked morphologically.

Extending CONTAIN beyond its configurational sense, a passive version is acceptable for force-dynamic situations as given in (25):

(25) a. The lake is contained by the dam.
b. The demonstrators were contained by the police.

In these sentences, the agents exert force on the objects or patients by physically restraining them. Passive obtains grammatically for these sentences because a sense of *dynamism* is present in each situation semantically, a notion very important to the transitivity prototype.

Based on the case of CONTAIN, several other configurational

verbs, which likewise signal a container/containee relation, might be expected to behave in the same way with respect to passive, but surprisingly, they do not. ENCIRCLE, SURROUND, ENCLOSE, and RING are configurational predicates that all passivize easily. They do so, I believe, for neither arbitrary nor exceptional reasons, but because motion is imposed on the static physical scene subjectively. This subjective motion introduces a sense of completion because it allows the speaker/conceptualizer to trace mentally around the containment and access the containing situation as a whole. (26) illustrates:

(26) a. The house is encircled by (the) trees.
b. The castle is surrounded by a/the moat.
c. The pool is enclosed by a/the fence.
d. The city is ringed by its suburbs.

I contend that these imperfectives suggest a particular interpretation of the scene they describe as a completed event. Indeed, the verbs in (26) suggest conceptual gestalts: CIRCLE, ROUND, CLOSURE, RING. This notion of geometric completeness, whether actual or not, may again be related to the telic/atelic distinction in the Hopper and Thompson paradigm. A sense of completion or goal attainment, no matter how abstract, may give a more punctual rendering to an imperfective situation. This is especially evident in the next set of examples. Compare (27a) and (b):

(27) a. *The swimming pool is contained by the yard.
b. The swimming pool is enclosed by the yard.

Both sentences in (27) predicate similar stative containment relations. However, the containment in (b) seems to highlight a sense of perimeter, and, by extension, of conceptual boundedness. The speaker-conceptualizer is able to access the containment relation sequentially and thoroughly by making a mental tracing around the swimming pool. This imposition of subjective motion on a static, physical scene, is akin to what causes the semantic contrast in pairs like those given in (28):

(28) a. The roof slopes upward over the patio.
b. The roof slopes downward over the patio.

Here, there is a clear difference in the two ways the same objective scene is being described. The sentences contrast semantically because they impart a different directionality to the manner in which the speaker-conceptualizer accesses and moves through the scene. Langacker (1986a) ascribes the contrast in pairs like those in (28) to differences in how the conception of some configurational scene is built-up or activated in processing time by the

speaker. Thus, just as the same overall configuration may be subjectively construed or experienced in various ways, so may it be differentially encoded grammatically. Returning to the sentences in (27), the yard in (b) becomes more mobile relative to the pool by virtue of subjective motion. The verb ENCLOSE suggests a definite, traceable perimeter, while CONTAIN does not. While directionality of the motion is not a factor here as it is in the sentences in (28), the motion itself is. This motion seems to put the objective scene in (27b) in line with more canonical transitive situations where the agent is more mobile relative to the patient and passivizability results. Notice how the differential grammaticality of these similar passive clauses turns on this notion of subjective motion as applied to an essentially static physical layout.

3. Conclusions

Such variable behavior with regard to passive for clauses sharing similar or identical propositional content (predicate-argument structure) is usually ignored by standard syntactic approaches or dismissed as exceptional or lexical. Nevertheless, data such as these seriously compromise even lexical approaches to passive because they would require a radical extension of the lexicon to encompass individual verbs, complex verbs, verbs with different types of nominal arguments, larger phrases with different types of sentential adverbials, and multiple listings of identical clauses representing different construals on a scene. On the contrary, I believe there is a lot to be gained by studying such marginal transitive clauses. Recurring patterns of behavior evinced by large numbers of different construction types can be indicative of fundamental conceptual constraints underlying grammatical organization in language. The phenomenon of transitivity is much more complex than we linguists would usually care to admit. Hopper and Thompson-like components take us part of the way towards a characterization of transitivity, but how such components would differentially apply to morphologically transitive and intransitive sentences which do or do not passivize is not straightforward. Passivizability was used here to indicate the degree to which sentences deviate from or approximate some transitive prototype. The viability of passive constructions in English was found to involve an interplay of all sorts of abstract factors, some of which dovetail the Hopper and Thompson components, some of which do not.

There is no cut-off point demarcating transitive and intransitive or passivizable and non-passivizable because the "transitivity threshold" that correlates with passive changes under varying lexical and clausal conditions. The way we construe our world conceptually is reflected in our linguistic systems. Grammaticization, therefore, is assumed not to be arbitrary but the product of systematic cognitive processes and organizational strategies. I have tried to demonstrate how grammatical coding reflects our *conceptualization* of events in the world and not necessarily external

properties associated with those events per se. The way we construe a scene or event, the way we conceive of participants interacting within an event, the way we access and experience it cognitively is what determines its transitivity profile. Transitivity is foremost a conceptual description applicable to events and not simply a label for types of linguistic expressions that meet certain morphological or predicate-argument requirements. For linguistic description and analysis to be fully accurate, it must make reference to this conceptual level of organization, a level of subjective construal beyond the reach of formal grammatical categories, logical form, and lexical exception.

Notes

[1] The Hopper and Thompson (1980) Transitivity Paradigm:

	HIGH TRANSITIVITY	LOW TRANSITIVITY
PARTICIPANTS	2 or more (A and O)	1 participant
KINESIS	action	nonaction
ASPECT	telic	atelic
PUNCTUALITY	punctual	nonpunctual
VOLITIONALITY	volitional	nonvolitional
AFFIRMATION	affirmative	negative
MODE	realis	irrealis
AGENCY	A high in potency	A low in potency
AFFECTEDNESS OF O	O totally affected	O not affected
INDIVIDUATION OF O	O highly individuated	O nonindividuated

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THINKING FOR SPEAKING

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My title deliberately turns a familiar pairing of terms--**thought and language**--into a more dynamic expression, replacing the abstract nouns with gerunds, and replacing the empty conjunction with a purposive preposition. "Thought" and "language" are often treated as two static entities, as a system of concepts and propositions that is somehow mapped onto a system of linguistic structures. There is often a third static term lurking in these discussions--"objective reality"--which is represented, however directly or indirectly, by the structures of language and thought. In much of cognitive psychology and AI, there is an implicit isomorphism between the first two terms (content and form), often with a direct relationship between these two and the patterned stimuli of the physical world. On the other hand, in much of the older linguistic and anthropological literature on language and thought, the structures of language were held to shape or determine the structure of thought, thereby serving as a selective filter between sensory experience and cognition. Be this as it may, we encounter the contents of the mind in a special way when they are being accessed for **use**. In the terms of my title, the activity of thinking takes on a particular quality when it is employed in the activity of speaking. In the evanescent time frame of constructing utterances in discourse, one fits one's thoughts into available linguistic forms. A particular utterance is never a direct reflection of "objective" or perceived reality or of an inevitable and universal mental representation of a situation. This is evident within any given language, because the same situation can be described in different ways; and it is evident across languages, because each language provides a limited set of options for the grammatical encoding of characteristics of objects and events. "Thinking for speaking" involves picking those characteristics that (a) fit some conceptualization of the event, and (b) are readily encodable in the language.

It is, of course, a truism of linguistics that anything can, somehow, be said in any language. Here I want to limit myself to what is most easily and automatically said in particular languages, especially with regard to several features of verbal morphology. In suggesting that the grammar of an individual language influences "what is most easily and automatically said," I am, of course, raising the restless ghost of Benjamin Lee Whorf, who suggested, in 1940, that "users of markedly different grammars are pointed by their grammars towards different types of observations and different evaluations of externally similar acts of observation, and hence are not equivalent as observers but must arrive at somewhat different views of the world" (1940/1956:221). My aim, however, is less ambitious. We will probably never succeed in demonstrating the effects of grammar on world view or

nonlinguistic behavior. What I have in mind is a more cautious goal, characterized in an early formulation by Whorf's great teacher, Edward Sapir, in 1924: "[The forms of each language] establish a definite relational feeling or attitude towards all possible contents of expression and, through them, towards all possible contents of experience, **in so far, of course, as experience is capable of expression in linguistic terms** (my emphasis--DIS) (Sapir, 1924/1958:152). The expression of experience in linguistic terms constitutes "thinking for speaking"--a special form of thought that is mobilized for communication. Whatever effects grammar may or may not have outside of the act of speaking, the sort of mental activity that goes on while formulating utterances is not trivial or obvious, and deserves the attention of linguists and cognitive scientists. Indeed, one can go back even further, to Franz Boas' Introduction to the *Handbook of American Indian Languages* in 1911. There, Boas considered a range of obligatory grammatical categories across languages and asserted: "When we consider for a moment what this [diversity] implies, it will be recognized that in each language only a part of the complete concept that we have in mind is expressed, and that each language has a peculiar tendency to select this or that aspect of the mental image which is conveyed by the expression of the thought" (1911/1966:39).

So much for raising the ghosts of our forebears in **this** century; more could be found, of course, in past centuries. Can we go any further than comparisons of grammars and tantalizing demonstrations of linguistic relativity? I think we can--in at least three ways, all of which focus on thinking for speaking. The first is to examine ways in which children acquiring different sorts of grammars begin to talk about experience. When do they stop talking like **universal** little children and start sounding like **native speakers** of particular languages? This is the topic of the present paper. The second is to study ways in which one's native language shapes one's mastery of the grammatical categories of a foreign language. That is, how well can one adapt one's thinking for speaking in a different system? And the third way is to study the contents of grammatical categories that seem especially resistant to historical change in a language or group of languages, on the assumption that these categories are exceptionally deeply ingrained as systems of "thinking for speaking." If the forms of each language "establish a definite relational feeling or attitude towards...contents of experience," this attitude should be established in early childhood, and should shape one's interpretations of other languages and of potential changes in one's own language.

I cannot claim to present definitive evidence from any of these three directions of study, but I can offer some suggestive directions with regard to the first approach by presenting a portion of work in progress on the acquisition of several different kinds of languages. I will focus on verbal marking of **aspect** and **motion** in four languages, with the hope that this approach to "neo-Whorfian" questions will have wider applicability. (Eventually, the second and third approaches should mesh with the first.)

At Berkeley, we have developed a technique for eliciting narratives from speakers of various languages, children and adults, in response to a standard picture story, presented without words.[1] In this way, we can hold objective content constant and ask whether the same pictured events are described differently on the basis of age or native language of the narrator.

Here I wish to sample from this research, presenting a few critical scenes as they are narrated in four languages: English, German, Spanish, and Hebrew. (The overall study, at this point, also includes Turkish, Icelandic, and ASL, with the potential additions of Polish, Russian, and Mandarin.) The four languages to be examined here lie on a continuum of elaboration of grammatical aspect: Hebrew has three simple tenses--past, present, future--with no grammatical marking of aspect. German has a single contrast of preterit and perfect. English has this contrast as well, along with a cross-cutting marking of progressive in all tenses. And Spanish, in addition to perfect and progressive, also distinguishes perfective and imperfective in the past. With regard to verbs of motion, English and German represent one of the basic types described by Talmy (1985), where the verb conflates motion and manner, with path expressed by satellites (e.g., *run / jump / float... in / out / across...*). Spanish and Hebrew represent another basic type, where the verb conflates motion and path, with manner expressed independently (e.g., *entrar / salir / pasar... corriendo / saltando / flotando* 'enter / exit / pass... running / jumping / floating').

I have picked three scenes from the picture-story in which speakers have options with regard to the encoding of aspect and motion. All three scenes deal with **falling**, but in different ways. First we will consider the potentials for aspectual marking of each of these three scenes in Spanish, English, German, and Hebrew, and then the potentials for encoding of motion. The data come from speakers of three age groups: preschool (3-5), school age (9), and adult.[2]

ASPECT

Scene 1: PUNCTUAL/DURATIVE

In the first scene, two events are pictured as simultaneous: a boy has fallen from a tree and is shown landing on his back at one side of the picture, while a swarm of bees is chasing a dog across the picture. Here, **falling** is PUNCTUAL, contrasted with NON-PUNCTUAL, DURATIVE activities of **chasing/running**. Languages that mark progressive aspect, like Spanish and English, allow for an opposition between a neutral verb form and a progressive, with the neutral form taking on a default punctual value, given the Aktionsart of 'fall'. The following description by an American 5-year-old is typical:

(1) *The boy fell out ... and the bees were flying after the dog.*

While this is possible in Spanish as well, the preferred version is to mark the punctuality of the first event by a perfective form, contrasting it either with an imperfective or a gerundive expression, as in the following 5-year-old examples:

(2a) *Se cayó el niño y le perseguían al perro las avispas.* 'The boy fell-PFV and the bees chased-IPFV the dog.'

(2b) *Se cayó ... y el perro salió corriendo.* 'He fell-PFV ... and the dog came-out-PFV running.

Spanish thus makes it possible to grammatically mark both poles of the durative-nondurative distinction, whereas English provides explicit marking only of the durative pole.

German and Hebrew lack distinctive marking of either pole of the distinction, and speakers generally do not distinguish the two events grammatically, as shown in the following typical examples, again from 5-year-olds:

(3) German: *Der Junge fällt vom Baum runter ... und die Bienen gehen hinter dem Hund her.* 'The boy falls down from the tree ... and the bees go after the dog.'

(4) Hebrew: *Hu nafal ve hakelev barax.* 'He fell and the dog ran-away.'

I have given examples from 5-year-olds, but it is important to note that the language-specific patterns hold across all ages, from 3 to 9, and adults. In German and Hebrew the tendency is to maintain the same tense-aspect form for both clauses, while in Spanish and English the tendency is to differentiate the two. This trend is summarized numerically in Table 1.

Table 1

PERCENTAGE OF NARRATORS USING SAME TENSE/ASPECT FORM FOR 'FALL' AND 'RUN' CLAUSES IN SCENE 1

	Preschool (3-5)	School (9)	Adult	OVERALL
Hebrew	71	100	63	78
German	54	80	78	71
English	26	22	33	27
Spanish	23	18	0	21

Consider these figures in the light of "thinking for speaking." If the figures for Hebrew and German were uniformly 100%, and for English and Spanish 0%, we could only conclude that speakers strictly adhere to the formal contrasts provided by their language, and it would not be possible to separate thinking from speaking. But the deviations from these extremes indicate that other options are possible. Some Hebrew speakers try to contrast the two events by presenting the first in the past tense and the second in the present, thereby recruiting a tense difference to mark the aspectual contrast COMPLETED-ONGOING; e.g.:

(5) *Hayeled nafal ... ve hakelev boreax.* 'The boy fell ... and the dog runs-away.' [5 yrs.]

Note that this option is used about one-third of the time by preschoolers and adults, while school-age children (age 9) follow the language most tenaciously in not attempting any aspectual distinction. (The only other option was the use by one adult of an inceptive construction, *matxil laruts* 'started to-run', thereby giving some indication that the second event has some duration with regard to the first.)

German presents a similar picture, with some flexibility especially in preschool age children who put the first event in the perfect, thereby closing it off as a resultant state with regard to the second event in the present; e.g.:

(6) *Der ist vom Baum runtergefallen und der Hund läuft schnell weg.* 'He has fallen down from the tree and the dog runs away quickly.' [5 yrs.]

The tendency in German is to mark the first event as completed, rather than to elaborate the second as ongoing,[3] with two notable exceptions:

(7a) *Er rannte schneller und immer schneller.* 'He ran faster and ever faster.' [9 yrs.]

(7b) *Der Hund rennt rennt rennt.* 'The dog runs runs runs.' [adult]

Such deviations from the overall tendencies of each language type are important, in that they show that it is, indeed, possible to try to mark aspectual notions like terminative and durative if they are not part of the regular system of verb morphology in one's language. And, on the other hand, the occasional lack of aspectual distinctions between the two clauses in Spanish and English shows that one need not make use of the full array of distinctions available in verbal morphology. What is most striking in Table 1, however, is the finding that **speakers so rarely make use of options that differ from the norm.** Overall, Hebrew and German speakers attempt to elaborate aspectual distinctions only about one-fourth of the time, while Spanish and English speakers fail to mark aspectual distinctions about one-fourth of the time. Such tendencies appear throughout our ongoing study of these narratives, clearly suggesting types of "thinking for speaking." Speakers of all ages, in the four languages, certainly **know**, in some nonlinguistic sense, that the boy's falling is punctual and completed with regard to the simultaneous ongoing chasing and running of bees and dog. But they generally do not seem to be inclined to express any more of this knowledge linguistically than fits the available distinctions in the language. It is striking that children as young as 3 already show a sensitivity to the "slant" of their particular native language. This point will be echoed as we examine tense/aspect in the other two falling scenes, and expressions of motion in all three scenes.

Scene 2: DURATIVE/RESULTATIVE

In the second scene, the boy and dog fall from a cliff into a pond below. This is shown in a two-picture sequence, with the boy and dog in mid-fall in the first picture and landing in the water in the second. Here **falling** is DURATIVE, contrasted with a RESULTANT STATE that is both INCEPTIVE and DURATIVE. Although 'fall' is typically discussed as a verb of inherent punctual aspect, here is a situation in which a falling event is slowed down, as it were, allowing it to be seen first as ongoing/durative and then as perfected. Again, the languages differ with regard to which phases of this episode are most readily grammaticized, and children as young as 3 are already selective in their descriptions. English-speaking children often switch from present progressive to preterit, again marking duration rather than result, as in:

(8) *The boy's falling. He falled into the water.* [3 yrs.]

Spanish- and German-speaking children present a different account with regard to this scene, often switching to the perfect or to a stative to contrast the resultant end-state with the preceding process, as in:

(9) Spanish: *Se caen los dos al agua. Aquí que ya se han caído.* 'The two of them fall to the water. Here they have already fallen.' [3 yrs.]

(10) German: *Der Hund und Walter die plummpsen da runter. Da sind die runtergeplummpst.* 'The dog and Walter, there they plop down. There they have plopped down.' [3 yrs.]

Hebrew-speakers, by contrast, use the same verb form for both events; e.g.:

(11) *Ve axarey ze hu nafal. Ve axarey ze hu nafal lamayim.* 'And then he fell. And then he fell to the water.' [4 yrs.]

(At most, Hebrew-speakers may distinguish the end-state by mentioning it with a locative phrase, but this is not a very widespread pattern.)

A comparison of narrations of the two falling scenes shows an interesting interaction between flow of attention and available tense/aspect morphology. In the first scene, falling is completed with regard to chasing/running; in the second scene, falling comes to conclusion. American English, with its much-used progressive and less frequent perfect, predisposes marking of the durative situation for both scenes--chasing/running in the first, and falling in the second. The Spanish progressive is more highly marked than the English, while participial forms expressing states are much more common than in English (Talmy, 1985). Thus, although both English and Spanish have progressive and perfect, the forms are used differently. The perfect is acquired late in American English, while it is freely used by Spanish 3-year-olds to encode stative situations, as in the second scene. The German perfect serves a similar function. Thus attention to process and state seems to be subtly guided by verbal morphology--at least with regard to the direction of attention flow for the purposes of describing and narrating situations.

Scene 3: PUNCTUAL/RESULTANT

In the third scene, the dog falls from a window with a glass jar stuck on his head, breaking the jar when he lands. Here **falling** is PUNCTUAL, leading to a RESULTANT CHANGE OF STATE that is also PUNCTUAL. Given what we have observed in the first two scenes, we should expect that none of the available durative forms of English and Spanish should be used; that the Spanish and German perfects should be used for the second event; and that the overall tendency should be to use the same tense for both clauses. And this is, generally, what we have found--with some interesting variations. The following are the most typical versions for each of the four languages, fairly consistent across the entire age range:

(12a)English: *He fell out the window, broke the jar.* [3 yrs.] / *Then he fell down and then the glass broke.* [4 yrs.]

(12b)Spanish: *Y luego se cae, se rompe.* 'And then (he) falls-REFL, (it) breaks-REFL.' [5 yrs.] / *El perro se cayó de la ventana y rompió un jarro que tenía en la cabeza.* 'The dog fell-REFL-PFV from the window and broke-PVF a jar that he had-IPFV on his head.' [9 yrs.]

(12c)German: *Der Hund fällt mit dem Glas runter und da ist es kaputtgegangen.* 'The dog falls down with the glass and there it has gotten broken.' [3 yrs.]

(12d)Hebrew: *Hakelev nafal im hakufsa ve hakufsa nishbera.* 'The dog fell with the can and the can got-broken-MIDDLE.VOICE.' [5 yrs.]

Overall, the two clauses are in the same tense, with a frequent switch to present perfect for resultant state in German. The same is not done in Spanish, however, for here the language provides a sort of passive/middle voice by means of the reflexive; Hebrew does the same by means of a verb-pattern (*binyan*) alternation. Where a passive or middle voice option is

available, it is a highly frequent choice for describing the breaking of the glass. Again, children as young as 3 are guided in their linguistic attention by grammatical morphology.

MOTION

The three falling scenes also clearly reflect the differences described by Leonard Talmy (1985) between the Germanic type of conflation of motion and manner with independent marking of path, and the Romance and Semitic type of conflation of motion and path with independent marking of manner. This difference is evident in the the example sentences offered in the preceding discussion of aspect in the four languages. Summarizing across those examples, we find rich independent marking of path in the two Germanic languages: **English**: *fell out* (1), *falled into the water* (8), *fell out the window* (12a), *fell down* (12a), and *flying after* (1), with only one example of simple *falling* (8). **German**: *fällt vom Baum runter* 'falls down from the tree' (2), *vom Baum runtergefallen* 'fallen down from the tree' (6), *plummpsen runter / runtergeplummpst* 'plop down / plopped down' (10) *fällt runter* 'falls down' (12c). If we were to look further, we would find a wide range of special verbs of manner in these two languages, such as English *splash in, dump off, tumble down* and similar verbs in German. And we would find elaborated strings of path-marking satellites, such as *OFF OVER a cliff INTO the water* and *fiel HERAB IN den See HINEIN* 'fell down-from-here in-to the lake.

By contrast summarizing over the preceding Spanish and Hebrew examples, we find mainly simple verbs: **Spanish**: *se cayó* '(he) fell-PFV' (2a,2b,12a), *se cae(n)* '(he,they) fall-PRES' (9,12), *se han caído* '(they) have fallen' (9), *perseguían* '(they) chased-IPFV' (2a). There is no elaboration of path, and only one elaboration of manner: *salió corriendo* 'came-out-PFV running'. **Hebrew**: *nafal* 'fell' (4,5,11,12d), *barax* 'ran-away' (4), *boreax* 'runs-away' (5), with only one elaboration of path: *nafal lamayim* 'fell to the water' (11). These tendencies are demonstrated throughout the Spanish and Hebrew narratives, where we find a collection of verbs that conflate motion and path, such as Spanish *bajar* 'descend', *salir* 'exit', *subir* 'ascend', and Hebrew *k-n-s* 'enter' and *y-r-d* 'descend'. There are only sporadic attempts to elaborate path, as the Spanish 4-year-old who said: *se cae por la ventana baja* '(he) fell through the window downwards'; and there are very rare attempts to elaborate manner, as the Hebrew 5-year-old who said, of falling from the cliff, *Az hem kol hazman mitgalgelim* 'then they roll down all the time'.[4]

The distribution of options chosen by 3-year-olds is revealing of general tendencies. Table 2 summarizes across the three scenes, dividing all instances of the verb 'fall' into the categories: verb alone (e.g., *fell*), verb + locative particle (e.g., *fell down / out / in*), and verb + locative phrase (e.g., *fell down from the tree / out of the window / into the water.*

Table 2

PERCENTAGES OF TYPES OF MOTION DESCRIPTIONS USED WITH VERB 'FALL' BY 3-YEAR-OLDS

	Verb	Verb + Locative Particle	Verb + Locative Phrase
English	4	61	35
German	15	65	20
Spanish	73	0	27
Hebrew	68	0	32

The four languages do not differ greatly in their use of the third option, verb + locative phrase. This suggests that these children are similar in the extent to which they orient to and specify the path (source or goal) of movement. However, with rare exception, the English and German children do not use bare verbs without a locative particle--although the few exceptions show that it is possible to say things like *he's falling.* The Spanish and Hebrew children, by contrast, are content to simply use some version of 'fall' (or, in other pictured scenes, 'throw', 'ascend', 'descend', 'enter', and other unanalyzed verbs of motion). The widespread use of locative particles by English- and German-speaking 3-year-olds suggests that they have already assimilated the pervasive pattern of path-marking characteristic of their languages.

By school age our young narrators have developed quite different patterns of describing motion events. The German and English children have both a greater frequency and diversity of locative particles and prepositions than do the Spanish and Hebrew children. For example, in describing Scene 2 (falling from the cliff into the water), there is a great difference in the number of locative elements--adverbial particles and prepositions--used by the 9-year-olds, with the Germanic speakers using about one-third more tokens per child than the Romance and Semitic speakers (average number of locative tokens per subject: English--2.0, German 2.2, Spanish 1.2, Hebrew 1.4).

These differences have an important effect on larger narrative structures. Scene 2 has a preparatory phase, in which the boy gets entangled with a deer who causes him to fall into the water. Germanic 9-year-olds tend to conflate causality, directionality, source, and/or goal in one clause--as, for example, the English, *he tips him off over a cliff into the water* or the equivalent German, *schmiß ihn den Abhang hinunter genau ins Wasser* 'hurled him down from the cliff right into the water'. Such compact expression is not available to Romance and Semitic speakers, and, as a result, a widespread narrative strategy consists in setting the scene in separate locative phrases, especially relative clauses with existential or stative verbs, and then referring back to this scene with a general verb of motion. The following two examples are typical:

(13) Spanish: *El ciervo le llevó hasta un sitio, donde debajo había un río. Entonces el ciervo tiró al perro y al niño al río. Y después, cayeron.* 'The deer took him until a place, where below there was a river. Then

the deer threw the dog and the boy to the river. And then, they fell.' [9 yrs.]

(14) Hebrew: *Ve ha'ayil nivhal, ve hu hitxil laruts. Ve hakelev rats axarav, ve hu higia lematsok she mitaxat haya bitsa, ve hu atsar, ve hayeled ve hakelev naflu labitsa beyaxad.* 'And the deer was startled, and he began to run. And the dog ran after him, and he reached a cliff that had a swamp underneath, and he stopped, and the boy and the dog fell to the swamp together.' [9 yrs.]

These examples show that thinking for speaking goes beyond the choice of particular lexical items and grammatical morphemes in structuring a mental representation of an event for verbal expression. Here we see an indirect grammatical effect on the preferred structure of sequences of clauses into paragraphs. Although speakers in any language **could** construct event descriptions like those in (13) and (14), this particular type of expanded scene-setting seems to be called for when using a language which does not provide detailed encoding of the causation and trajectory of movement in the verb and its satellites. What we have, then, is a particular kind of narrative strategy in which the scene is sketched out in a series of separate clauses, allowing the trajectory and its causation to be inferred, rather than explicitly encoded. The Germanic strategy seems to be quite the opposite. It is worth speculating whether such apparently small differences might have larger effects on the organization of discourse. As John Gumperz (1982) and other sociolinguists have suggested, strategies for constructing and interpreting extended discourse are deeply influenced by the kinds of "thinking for speaking" that are predisposed by the grammar of a particular language.

Even a cursory examination of children's speech across languages suggests, as I have tried to demonstrate, that children as young as 3 seem to be guided in in how they choose to talk about experience by the most available grammatical means provided by their native language. They do not tend to compensate by additional means where the language is relatively underelaborated, nor simplify where the language is relatively elaborated; and they come to adapt the structure of connected discourse to the strengths and limitations of grammatical means for encoding event characteristics. A full examination of crosslinguistic and developmental data, such as these narratives, should more clearly reveal the ways in which thinking adapts itself for speaking. The result of such study, I suggest, would be to define a level of mental representation which may not be involved in perception and habitual behavior--as Whorf advocated--but which is nevertheless intimately involved with language, and, in a real sense, **exists because of language.**

FOOTNOTES

1. The study reported here was planned and directed in collaboration with Ruth A. Berman (Tel-Aviv University), with support from the U.S.-Israel Binational Science Foundation, the Linguistics Program of the National Science Foundation, the Sloan Foundation Program in Cognitive Science at the University of California at Berkeley, and the Max-Planck-Institut für Psycholinguistik in Nijmegen. The data were gathered, analyzed, and discussed in collaboration with: Ayhan Aksu-Koç (Boğaziçi University, Istanbul), Michael Bamberg (Clark University), Esther Dromi (Tel-Aviv University), Virginia Marchman (University of California, San Diego), Yoni Ne'eman (Tel-Aviv University), Tanya Renner (University of California, Berkeley), Eugenia Sebastián (Universidad Autónoma, Madrid), and Christiane von Stutterheim (Universität Heidelberg). All stories were elicited in standard fashion by use of a picture story-book, *Frog, where are you?* (Mayer, 1969). This method was developed by Michael Bamberg, and the first full-scale analysis of German stories appears in his 1985 Berkeley dissertation. Additional reports of the project can be found in Berman (1986), Berman and Slobin (1987), Slobin (1986), and forthcoming publications. I am grateful to Ruth Berman for her major role in helping to develop the research program and the ideas presented here.
2. In all four languages there were groups of narrators aged 3, 5, 9, and adult; in Spanish, English, and Hebrew there were also groups of 4-year-olds. There were 12 narrators in each group, except for the Spanish adults, for whom only six stories have been analyzed. The data were gathered in Berkeley by Tanya Renner and Virginia Marchman, in Madrid by Eugenia Sebastián, in Berlin by Michael Bamberg, and in Israel by Ruth A. Berman.
3. It appears, generally, that when German speakers choose to take an aspectual perspective, they tend to orient to some marking of boundedness ("terminative aspect"). This is evidenced at several points in our narratives, as well as in the history of the language. English speakers, by contrast, tend to orient to durativity, as if echoing the historical development of the progressive as a particularly "English aspect" among the Germanic languages. As suggested above, thinking for speaking **in language-specific** ways seems to establish itself as a pervasive pattern over time.
4. It is interesting that it is especially the 5-year-olds, in Spanish and Hebrew, who make occasional attempts to grammatically mark features of aspect and motion beyond the typical means available in the language (as noted above as well). The 9-year-olds, by contrast, are especially stereotyped in their narrations, adhering closely to the typological constraints of the language.

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Metaphorical Models of Thought and Speech: a comparison of historical directions and metaphorical mappings in the two domains

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Introduction: puzzles for historical semanticists.

Recent semantic research has begun to dispel what I regard as two fundamental misconceptions: (1) the idea that semantic change is whimsical and random in direction and (2) the idea that metaphor is a "frill" on the fabric of linguistic meaning, rather than a structural part of our meaning-system. One of the clearest cases of regular direction in semantic change is the tendency for words to change from a more concrete to a more abstract meaning: for example, for words describing abstract domains such as time to be derived from words for more concrete spatial concepts.[1]

However, within such broad domain-to-domain mappings, the specific routes of change often remain apparently obscure. For example, the English verbs *report and refer* come from a pair of near-synonyms in Latin, both meaning "carry back (again)." It seems reasonable to say[2] that speech exchange is a relatively abstract, subjective domain, and thus would tend to draw vocabulary from the physical domain of spatial motion and location of objects. But this leaves further questions: why don't *report* and *refer* have very close meanings as speech-act verbs in English, if their original sources were so close in meaning? Given that there are regular, directional paths of semantic change between domains such as spatial movement/location and speech exchange, how regular or irregular are the correspondences between senses in one domain and newly-developed senses in the other domain?

The claim of this paper will be that in fact much regularity can be uncovered by examining the details of the metaphorical mappings involved in word-histories, and in particular that it is important to analyze these mappings at the appropriate level of generality. Specifically, I shall explore the metaphorical relationships which allow verbs referring to mental states (or reasoning processes) and speech exchange to develop historically from words which once signified physical motion or location. The object of my analysis is to account for observed commonalities and differences between the semantic origins of speech-act verbs and mental-state verbs: both often start life as physical motion/location verbs, but *which* physical-domain verbs map onto *which* senses in the two more abstract domains? The commonalities in (synchronic and diachronic) metaphorical structuring of the two abstract domains turn out to account for both similarities and contrasts between historical semantic sources for the two classes of verbs: we can use detailed metaphorical analysis to account for observed directions of meaning-change, and to *avoid predicting unobserved changes.* En route, it will emerge that *report* and *refer* are both regular instances of two distinct metaphorical mappings between the physical domain and the speech-act domain.

I shall be drawing my data from two sources: the historical semantic development of the current English vocabularies of mental states and speech acts, and current English metaphors for speech and mental activity. I regard these two sources as mutually reinforcing, since it turns out that the principal metaphors involved in the relevant semantic histories are lively metaphors in spoken English today. This appears to me to be interesting evidence of the commonality and longevity of the said metaphors in the Indo-European language family, especially since many of the historical semantic shifts involved took place in Latin, before the words in question were borrowed into English.

The vocabulary of mental states and speech acts.

Meaning-change remains perhaps the least understood area of linguistic change, but recent work (Traugott 1982, Traugott 1985, Fleischman 1982, Sweetser 1984) has strongly suggested that there are regular, often "one-way" historical directions in semantic change.[3] One of the best-recognized directions of meaning-shifts is the tendency for the vocabulary of physical space and motion to be a source from which languages draw their expressions for more abstract concepts, such as time and mental activity. Crucially, shifts in meaning going the opposite direction are so rare as to be almost unknown. Corresponding to this direction in historical development, Reddy (1979) and Lakoff and Johnson (1980) have further shown that the vocabulary of spatial relations synchronically pervades our description of speech-interaction.

Traugott (1985) and Traugott and Dasher (1985) demonstrate that there is a historical direction in meaning-change (1) from verbs of physical location/motion to both mental-state senses and speech-act senses and (2) from mental-state senses to speech-act senses. But verbs describing speech acts do *not* develop mental-state senses. These observations fit well with Traugott's (1982) theory that semantic change in general tends to be from the propositional to the textual to the expressive, or (more broadly) words tend to move towards more *personal* meanings. A similar direction can be observed in the semantic history of the English modal verbs (cf. Shepherd 1981, Sweetser 1984): they developed from non-modal senses (often involving physical strength or force) to root modal senses such as (1), and then added epistemic uses such as (2). (3) is an example of a speech-act use of an English modal, though the history of such uses has not yet been established.

(1) You may go. (permission to go in the real world)
(2) John may be coming. (possibility of conclusion in epistemic world)
(3) There may be a six-pack in the fridge, but we have work to do.
(admission of premise & offer into discourse-world, but
refusal to admit normal implicature)

When we say that semantic change tends to move from concrete to abstract, or from less to more personal, we crucially do *not* mean that any old concrete meaning can be extended to any old abstract sense: rather there is some ***mapping*** between concrete and abstract domains, which

designates *correspondences* between entities in the two domains. Permission is extended to mean possibility, and obligation (*must*) is extended to mean certainty or necessity in the realm of reasoning: we would indeed be surprised if *John may be coming* meant "I am forced to conclude that John is coming." The first question before us, then, is what connections make it possible for spatial verbs to extend to the mental-state and speech-act domains, and for mental-state verbs to extend their meanings to the speech-act domain (but not the opposite direction)?

Traugott and Dasher comment that one strong connection between mental states and speech acts is that a particular mental state is often a precondition for the sincere or felicitous performance of a particular speech act. For example, one must have mentally *certified* or "made certain" that something is true, before verbally *certifying* its truth to others; mental (sometimes via physical) *observation* precedes *observing* in the sense of "making a remark;" mental *recognition* is required to *recognize* a person by giving him/her the floor. The same is true of affective states, as well as of epistemic states: a sincere speech act of consent has emotional *consent* ("feeling with") as a precondition. In the cases just mentioned, and in others, the mental sense of the verb precedes the speech act sense historically; and this historical direction mirrors our understanding of the structure of speech acts.

Besides the unidirectional connection between our mental-state and speech-act vocabularies, Traugott and Dasher also note some simple *commonalities* in the sources of speech-act and mental-state verbs, and some differences in the sources. To begin with the differences, mental verbs frequently come from the semantic domain of physical vision, while speech-act verbs do not. This fact seems to have its basis in a very strong metaphor which is at least pan-Indo-European: *I see* can mean "I know/understand" but not "I say" (or some other speech act sense), because cognition but not speech-exchange is metaphorically understood as physical sense-perception, and most primarily as vision.[4] On the other hand (and unsurprisingly) speech-act verbs but not mental-state verbs commonly derive from words meaning various kinds of sound-production (e.g., *acclaim* from Lat.*clamare* "cry out", *invoke* from Lat.*vocare* "call, cry"). The major common sources for the two domains are (1) mental state verbs (we already mentioned that these are a source for speech-act verbs: and by default, as it were, they are naturally also a source for mental-state verbs) and (2) verbs of spatial location and motion. Thus the mental (and hence marginally speech-act) *suppose* comes from Latin *sub+ponere* "put under"; while the basically speech-act *propose* comes from Latin *pro+ponere* "put forward": here we see one verb indicating physical movement coming to mean mental activity, while another (and apparently parallel) verb of physical movement has come to refer to speech instead.

The rest of this paper will be an examination of the metaphors inherent in the histories of spatially-derived English speech-act and mental-state verbs. What I shall argue is that a detailed examination of

these metaphorical structures points out both the differences and the similarities between our views of speech and of mental states. There are areas of overlap in our metaphorical structuring of the two domains, and areas of non-overlap: where the metaphors overlap, so do the etymological source-domains - and where the metaphorical treatments of the two domains are at variance, the etymological sources are distinct.

Shared metaphorical structuring in the mental and speech-act domains.

Traugott and Dasher mention that Reddy's conduit metaphor seems to be at the base of many of the metaphorical semantic developments of speech-act and mental-state verbs. This metaphor is, briefly, that ideas are objects which can be packaged in language, and given or sent to an interlocutor, who unpacks the linguistic package to get at the ideas inside. Traugott and Dasher further comment that this seems to be part of a broad, Indo-European metaphor of ideas as objects. In other words, both our concept of linguistic acts and our concept of mental states treat ideas as objects.

Let us examine some metaphorical semantic shifts in more detail, to see exactly what structures are shared in our metaphorical treatments of the two domains in question. One important shared metaphor is that of **travel**: mental activity and conversation are both movement through some metaphorical space, the space being identified with the subject-matter of thought or speech. Evidence of this lively metaphor (cf. Lakoff & Johnson 1980) can be found in usages such as "We haven't *gotten anywhere* in this conversation, or "When I figure out this problem I can *go back* to the issues I really care about." Spatial particles and prepositions, as well as verbs, are extended from the domain of physical movement to movement in the worlds of thought or speech. Just as we can *walk about* the grounds or *go over* the house in space (where *over* and *about* signify what kind of trajectory was followed), similarly we can *talk over* a problem, or *talk about* a topic, or *think about* or *think over*. With talking and thinking, as with physical movement, *over* has an implication of full "coverage" of the territory which is not present with *about*. We will later have reason to distinguish this metaphorical travel through an abstract space from other spatial metaphors of thought and speech, and in particular from the "ideas as objects" metaphor mentioned above, which has structured both domains as well.

Returning to "ideas as objects," let us first examine how this metaphor structures our language of mental states. Possibly the single most productive etymological source-domain for English mental-state verbs is that of object-manipulation: the mind is a manipulator of thoughts or ideas, which are identified with manipulable objects.[5] Our cognitive processes are seen as holding, touching, and moving mental objects. Something understood is said to be *grasped* or *comprehended* (< Lat. comprehendere, "to seize"): or a mind can *catch on to* a new idea, or more informally just "get it."

Once suitably captured and internalized, mental objects can be united or separated, arranged or reordered. *De-cide* (< Lat. de+caedo "cut off from") and *distinguish* (Lat. di(s)- "apart") suggest that both mental choices and mental distinctions or categorizations have been metaphorically structured as physical separation processes. Decision-making is mentally separating the chosen option from the rejected option. Categorization is mentally putting concepts into sets (delimited areas of our mental space); thus two objects which are distinguished or differentiated from each other are mentally "separated" by being put in different sets. (Cf. "I can't tell them *apart.*" or "I can't tell one *from* the other" where *from* marks separation.) Proper mental order is "a set for everything and everything in its set;" but sometimes we *mix up* things, putting different things in a common container rather than successfully keeping them in their appropriate containers. *Con-fuse* (Lat. con+fundere "pour together, mix") portrays ideas specifically as mixable liquids which must be kept separate if we are to be able to make mental distinctions between them.

Prefer (< Lat. prae+ferre, "carry before") shows a model of our likes and dislikes as a linear mental array wherein "favorites" are at the front, closest to the ego.[6] The array appears to be the same one invoked by usages such as "My family comes *first*" and "That project is *close to my heart.*" The word *priority* (Lat. prior, "ahead of > before > of greater importance than") historically reflects the same metaphorical structuring of subjective importance-ratings. Being first in a linear sequence would not necessarily indicate subjective importance, if the linear dimension in question were not "closeness to self," hence "importance to self."

One important set of idea-manipulation processes is the set of logical processes, and indeed we find spatial metaphors in this domain. *De-duce* (< Lat. de+ducere "lead out/from") relies on a metaphorical structuring of deduction as *bringing out* some previously unknown conclusion from the background of known premises; *in-fer* (< Lat. in+ferre "carry in") models a reasoning process which allows certain conclusions to *enter* the mind from outside premises (or perhaps to enter a new mental space from some other mental space external to the new one). The idea here is that a new piece of knowledge or belief is "imported" into some mental space - perhaps from outside, perhaps from elsewhere in the mind. Such a view of reasoning is consistent with the above-mentioned views of categorization and understanding: Ideas are objects "contained" in our mental space, which has smaller "containers" like categories as subspaces. A newly "grasped" concept will thus be brought *into* a mental space where it was not previously located.

Reasoning can also be viewed as *building* a logical object: *sup-pose* (< Lat. sub+ponere, "put under") and *hypo-thesize* (< Gk. hypo+thesis "under-putting") see premises as lower parts of a structure, supporting conclusions.[7] Our belief-system is here seen as not simply a bunch of idea-objects and container-spaces, but as involving *structural relationships* between objects within spaces. In a theoretical *construct*, the most basic,

strongest, most firmly placed beliefs are a foundation, while contingent beliefs "rest on" our less contingent beliefs: we could change the contingent beliefs without altering the rest of the structure, rather as one can change a roof-tile on a house without taking up the foundations. *Pre-sume* (< Lat. prae+sumere "take before, take in advance") suggests a similar precedence of premises over conclusions, but this time linear: our reasoning processes are seen as a mental journey, starting from *presumptions* and *presuppositions* and moving on to finish the movement at some *conclusion*, which is "later" in the journey than the starting-point.[8] Phrases like "line of reasoning" and "prove it step-by-step" are modern English evidence that this metaphor is still alive. *As-sume* (< Lat. ad+sumere "take to (oneself), lay claim to as one's own") sees an idea as an object which the speaker already lays claim to as his/her own, rather than being in the process of acquiring, hence an assumption is a presupposed rather than a logically developed idea. *Sur-mise* (< Lat. super+mittere "send/throw upon") and *con-jecture* (< Lat. con+iacere "throw together") portray hasty reasoning as a pot-shot and a quickly "tossed together" structure respectively.

Mental activity, then, is metaphorically structured as the manipulation of ideas (= mental objects). In particular, such objects may be seen as inside or outside a mental *space*, they may be placed in a subjective linear order or participate in a linear reasoning sequence, or they may be building-blocks in a theoretical construct. How are these metaphors similar to or different from our understanding of speech-acts as object-manipulation?

Most obviously, speech-exchange is normally metaphorically viewed specifically as *exchange* of objects (=linguistically packaged ideas), rather than, for example, grasping or separating or ordering objects. A particular speech act is, then, a single act of transferring an object. Or is it? I can *pro-pose* (< Lat. pro+ponere, "put forward") something: physically putting something forward towards my interlocutor (who is presumably considered to be facing me) offers the object, but does not ensure its acceptance. And this metaphorically represents a speech situation wherein there is no certainty that the hearer will "accept" the speaker's proposal by agreeing with it.[9] Other similar cases are *sub-mit* (< Lat. sub+mittere, "send under"), and *sug-gest* (< Lat. sub+gerere, "drive/do under"[here, something like "offer or tender (from) below]). The prefix *sub-* marks some deference or uncertainty on the part of the person offering the object: the recipient is seen as being *higher* than the giver (authority is up, subjection is down). The *pro-* of *propose* is echoed in *promise* (< Lat. pro+mittere, "send forward").

The two-way structure of the speech act can be seen in the uses of the prefixes *ad-* and *re-* in the Latinate sector of the English speech-act vocabulary. *ad-mit* (< ad+mittere, "send (in)to"), *as-sert* (< ad+serere, "claim," lit. "join/connect to"), and *as-sent* (< ad+sentire "feel towards") show the use of *ad-* to indicate directionality from speaker towards interlocutor.[10] On the other hand, *re-ply* (<re+plicare, "fold back, unroll"), *re-fute* (<

re+futare "beat back"), *re-fuse* (< re+fundere, "pour back") and *re-ject* (< re+iacere, "throw back") show the opposite direction of movement. An answer "folds back" the topic to the interlocutor, while a refutation hostilely beats back the content-gift (not accepting the proffered object at all), a rejection throws it back, and a refusal pours it back (the proffered object here is presumably a liquid, ungratefully dumped at the giver's feet). In each case, the verb stem indicates an act of moving, of transferring a speech-act object to the hearer, while *re-* indicates that the movement retraces a previous trajectory. If it is the *same object* retracing that trajectory, then the natural interpretation is that it was not accepted by the intended recipient. Another similar case is *ob-ject* (ob+iacere, "throw against/in the way of") here the adversative sense comes from *ob-*, and the thrown object is seen as being thrown in response or defense against objects coming the other direction. These verbs, then, so not so much assert as presuppose an exchange: if there had not been previous traversal of the metaphorical path between speaker and hearer, then it could not be re-travelled.

At first glance, *re-fer* (< re+ferre, "carry back") seems parallel to the examples given above: it comes from an earlier sense of conveying an object back to its source. Yet it carries with it no sense of answering or of rejecting an interlocutor's speech act, which are the two speech events commonly metaphorically represented by retraversal of a trajectory, within the structure of the Conduit Metaphor. In fact, *refer* is not an example of the Conduit Metaphor at all: the hearer's mind is "carried back" to some known or previously mentioned point in the space traversed by the conversational journey, rather than the speaker "carrying back" an unaccepted proposal to the interlocutor. The metaphor here is thus (as previously mentioned) that conversation (like mental activity) is a movement through mental space, and that an utterance or a word may *relocate* the conversationalists in this space. We can contrast *refer* with its erstwhile synonym *re-port*, whose route of semantic change *was* the Conduit Metaphor: here, what is carried is content (information), and it is carried "back" to the interlocutor either because the information-giver may physically have returned to the interlocutor after being absent to do investigation, or more metaphorically because the information is given *in response* to a request, returning back along the trajectory established by the query.

An important methodological point is brought up by the preceding examples: earlier senses of words do not in themselves suffice to tell us how they acquired their current senses. The retraversal of a path may be mapped onto the structure of conversation in more than one way: the path may be the Conduit for information-exchange, or alternatively it may be a path in the joint mental space established for the interlocutors by the conversation. Whether *re-* carries a sense of answering/opposition depends on which of these two metaphors was involved in the semantic history. There seems no way to predict, *a priori*, which of these two verbs of motion would develop which of the two speech-act senses in question: but the

interesting fact is that neither development is "random" in the sense of being incoherent with other larger metaphorical systems which existed in both Latin and English. There were not limitless numbers of equally likely mappings into the speech-act domain, for a verb meaning "carry back."

Another crucial point is that there is only systematic structure to these metaphorical semantic shifts if we examine them at the correct level of generality. It would be unhelpful to say that *refuse* is evidence that there was a Latin metaphor of conversation as pouring: it is more useful to say that conversational exchange can be seen as pouring *because* it is more generally seen as transfer of physical objects along a spatial trajectory between interlocutors. The Conduit Metaphor is *schematic* (cf. Langacker 1982, Brugman 1981, Lindner 1981): it is not a single metaphorical mapping of one specific image onto another, but a schema for such mappings. Pouring, throwing, sending, and putting are different specific structures, all of which fit this schema because they are all examples of physically moving an object from one place to another along a spatial trajectory which does not end at the location of the person causing the movement. Any such physical transfer away from the agent can be mapped onto the speech-act situation of a speaker "transferring" content to an interlocutor. But the regularity is to be observed at the schematic level.

Contrasts and likenesses in spatial metaphors of thought and speech.

The above collection of etymologies and synchronic metaphors is intended to give some idea of the ways in which "ideas as objects" turns out to structure two different semantic domains. Although object-transfer is a kind of object-manipulation, it seems fairly clear that verbs of speech are taken specifically from expressions indicating some phase of a mutual object-exchange process, while verbs of thinking are taken from descriptions of other kinds of object-manipulation, such as holding, setting in order, or construction of a building.

As an example of the special structuring of speech as object-exchange, let us examine the pattern of metaphorical uses of spatial particles in English. We have already mentioned that speech and thought are both metaphorically viewed as journeys, with the result that *think about/over* and *talk about/over* exist as parallel metaphorical extensions of the spatialization seen in *walk about/over.* In the physical spatial domain, there exists a regular contrast between the use of the prepositions *to* and *at,* as in *throw the ball to Sally* and *throw the ball at Sally,* where *to* tends to indicate both active reception on the part of the goal and successful completion of the trajectory, while *at* tends to mark an inactive goal and/or unsuccessful aim.[11] The use of *at* vs. *to* thus serves as a linguistic marker of reception or completion, as opposed to non-reception or incompleteness (and thus unaffectedness of the goal) in a physical spatial object-transfer process. In the speech-act domain, we find a regular use of this linguistic contrast to mark non-reception or incompleteness of the metaphorical transfer process (i.e., unsuccessful attempts to communicate, in particular cases where the

hearer is - intentionally or unintentionally - not receiving the message). Compare *talk to* with *talk at, shout to* with *shout at, whisper to* with *whisper at,* and so on. A broad class of speech-act verbs show this contrast. However, we do not find a parallel contrast in the domain of mental state and activity verbs: *think to* and *think at,* for example, do not have such a contrasting pair of senses, presumably because *think* is not metaphorically mapped onto a schema involving a trajectory over which an object is transferred.[12]

A second domain which is particularly metaphorically linked to speech acts as opposed to mental states is that of combat: conversation (in this case, argument) but not thought is standardly seen as warfare or single combat. This is the basis for the etymologies of several speech-act verbs, e.g.*concede* (< Lat. concedere, "to yield, give up, cede") and *insist* (< Lat. insistere, "stand in/on, stay"): *insist* in particular would be rather mysterious without an understanding of argument as war, since there is nothing particularly "insistent" about staying where you are, unless there is somebody trying to drive you away forcefully. We may also note perlocutionary verbs like *convince* (< Lat. con+vincere, "(intensifier)+conquer" > "convict, prove mistaken"): winning a debate or argument is viewed as victory in a battle. Although there exist metaphorical ways of seeing psychological processes as battle ("wrestle with your conscience"), there do not seem to be mental-state verbs derived from such metaphors. Unlike argument, which is *primarily* metaphorically seen as combat, thinking and other mental states/acts are only very secondarily so viewed.[13] Presumably this is not by chance: speech exchange, like battle, is active and multi-participant, while mental activities and states are essentially single-participant and usually viewed as more stative. As evidence of the lively state of the "argument is war" metaphor in modern English, notice how ordinary and unpoetic it seems to say that one is "gaining" or "losing ground" in an argument, that your opponent "hit below the belt," or even that someone "brought out the heavy artillery."[14]

It is worth pointing out that our ways of metaphorically viewing speech exchange are not only somewhat divergent from our ways of viewing mental states, but are also not completely *internally* coherent. For example, if you *gain ground* in an argument, you are imposing your beliefs on someone else: while if you *lose ground,* you are *accepting* another viewpoint. So on one level, the object-exchange model of conversation says that success consists of *giving* (and not having one's contribution rejected): but alternatively, the war model of argument (a subclass of conversation) says that success consists of *taking territory* from your opponent (besides, of course, seeking to stay unhurt and hurt your opponent). There seems no way to reconcile these two models.

Summing up the comparison of the two domains.

We have now looked in some detail at the spatial metaphors which are synchronically and diachronically prominent in the vocabularies of speech acts and mental states. The general idea of an idea as an object

("packaged" in words, if communicated) is common to the two domains, though different in its specific instantiations. Speech exchange is seen as transferring an object from the speaker's mental space to the hearer's (or possibly sometimes to a joint conversational space). Mental activity is seen as many different kinds of object-manipulation, but can be specifically seen as bringing objects into a mental space: hence (as discussed above) *infer* and *admit.*[15] However, the exchange and battle models seem to be specific to our metaphorical treatment of speech-acts.

In other areas, the sources of speech-act and mental-state verbs are either more distinct or more identical with each other. We have mentioned the existence of a journey metaphor in both domains, and some similar spatialization of the two domains occurs as a result; whereas noise/vocalization appears to be a direct source only for the speech domain, not for mental verbs.

Conclusions.

The theoretical issues behind this analysis are far more important than the specific questions of where exactly mental-state verbs and speech-act verbs come from. The idea that past metaphorically-motivated meaning transfers are reflected in current meanings of words is an idea which has been argued for in various other places (cf. Traugott 1986, Brugman 1984, Sweetser 1984) but which is further supported by this data. It is particularly important to note that the metaphors discussed above are *both* synchronically lively and diachronically important in past meaning-shifts. Without treating *convince* as an instance of "argument as war" in modern English, one must conclude that at an earlier stage of its history it was influenced by the same sort of metaphorical mapping evident in our modern "win an argument" or "hold your ground in a discussion."

There is yet another alternative to be considered, besides that of synchronic polysemy based on a lively metaphor (I believe that the speech-act sense of *admit* may be an example of such a structure) and historically metaphorical but synchronically non-metaphorical cases (such as, perhaps, *convince*). For prefixes such as *in-*, *ad-*, *re-*, and roots such as *-pose*, *-mit*, *-duce*, or *-fer*, English speakers almost certainly do not have the sort of literal interpretations available to classical Latin speakers. However, given the liveliness of some of these spatial metaphors in modern English, and given still-extant spatial meanings for many of these prefixes and roots, it seems to me to be an empirical question to what extent the spatial metaphors inherent in the Latinate English vocabulary of speech and thought are still metaphorical. The answer may well vary with the morpheme, and I hope to address this issue further in the near future.

Finally, the preceding analysis brings out the crucial importance of doing metaphorical semantic analysis at the relevant level of generality. I have already mentioned how non-insightful it would be to analyze the semantic history of *refuse* as involving a Latin metaphor of speech exchange as pouring: this is too low-level and specific to capture the generalization at

stake, which is that speech exchange is schematized as transfer of an object. Likewise, it can be misleading to view metaphorically based meaning-relations at *too* general a level. The "ideas are objects" metaphor, as we have seen, underlies many of the metaphorical schemata involved in our vocabulary of both thought and speech acts. However, it is important to see that more specific metaphorical mappings ("speech-exchange is object-transfer," "reasoning is building a structure") are involved in the actual mappings between domains: "ideas are objects" is almost a meta-metaphor. Choosing the wrong level of generality would either result in our failing to see any regularity (just saying "speech can be seen as pouring, or throwing, or..."), or in our failing to distinguish between separate regularities which share some background (and thus, for example, missing the contrast between the histories of *refer* and *report*). But a metaphorical analysis at the relevant level can motivate both observed sense-changes and gaps in the observed range of sense-changes, besides giving a more satisfying account of the semantic relationships involved in polysemy relations synchronically.

Acknowledgements.

As is evident, this work owes a major debt to all of Elizabeth Traugott's work on semantic change, and also to the work of George Lakoff, Mark Johnson, and Claudia Brugman on metaphorical structures in language and especially within word-meaning. In discussion as well as in print, all of the aforementioned people have greatly contributed to my understanding of the issues discussed in this paper. I am also grateful to Vassiliki Nikiforidou, Mark Turner, Yakov Malkiel, and Orin Gensler for their helpful comments and reactions.

Footnotes.

1 I refer to well-known examples such as "past is behind, future is ahead," wherein a timeline is metaphorically mapped onto a path stretching ahead of and behind the speaker, with speaker's location mapped onto the present moment (e.g., *That deadline is two weeks ahead*). For discussion of relations between temporal and spatial vocabulary, see Clark 1973, Traugott 1982, Fillmore 1971, Lakoff and Johnson 1980.

2 cf. Traugott 1985, Traugott and Dasher 1985.

3 In particular, it now seems clear that a word's earlier meaning determines whether it is likely to add some particular meaning to its later senses, and that (Traugott 1986) synchronic polysemy-relations are the product of past meaning-shifts, which can often be reconstructed from the polysemy-relations.

4 See Sweetser (1984) for a discussion of this metaphor and the motivations behind it.

5 See Sweetser (1984) for a discussion of this metaphor with respect to both vision and mental-state vocabulary.

6 Note that this coheres with other distance/closeness metaphorical structurings, e.g. ideas of emotional "closeness" and "distance." A friend is "closer to" us than a

stranger. Family trees show the same egocentric structure: we have "closer" as opposed to "more distant" relatives.

7 Cf. expressions such as "supporting evidence," etc. Lakoff and Johnson (1980) have an excellent discussion of this metaphor, which is extremely lively in modern English.

8 Note the difference between the *pre-* of *prefer* and that of *presume*. A preference is placed "ahead" of less preferred objects in an order of emotional closeness to ego: the logical order from premise to conclusion is also linear, but here the *pre-* indicates priority on a metaphorical time-line as the reasoner journeys towards the conclusion.

9 It is worth noting here that the thing given, accepted, or refused is understood to be the *mental* object (the idea conveyed, the intention expressed), not the linguistic form itself. If a proposal is accepted, the *content* of the proposal was accepted. This is rather reminiscent of real packages: if you send me a gift in a box, and I later send you a gift in the same box, you would not say I hadn't accepted your gift, or that I had sent it back, which is what you would say if I sent back the contents.

10 This includes, interestingly, a clear sense of *psychological* exchange, as well as verbal exchange: note the original psychological sense of *-sent* in *assent* and *consent*. It seems that it is possible for these speech-exchange verbs to come into being via mental verbs: but the mental verbs have to themselves be verbs structured around the mental back-and-forth of speech exchange: a consent is not simply a mental state, it is a (probably communicated) reaction to an interlocutor's mental state.

11 *At* has a broader range of such uses, including the well-known contrast between *shoot* and *shoot at*.

12 There is one possible case of a mental verb with such a contrasting use of *to* and *at*: the mental (metaphorical) readings of *look to* and *look at*, as in *Look at how miserable Joan was until she moved to the city* or *You can look to Joan for an example of how to get projects finished.* The contrast is perhaps more subtle with *look*, but *look to* here seems to mark more participation on the part of the object: Joan is actively providing an example, rather than merely being viewed. It should be unsurprising by now that this marginal use of the language of trajectory-completion in the mental-verb domain is found precisely in an area where the domain of sight itself (the source-domain for this metaphorical expression of cognitive processes) is metaphorically viewed as traversal of a (visual) trajectory between subject and object: mental activity is spatialized in this way because vision is.

13 Mark Turner points out to me that our emotions and moral judgements are far more frequently seen as metaphorically involved in struggle and conflict than are our reasoning capacities. I have not yet investigated enough etymologies in these semantic areas to know whether there is a correlation between these metaphors and polysemy structures or semantic change directions. It is also true that we can discuss problem-solving (including reasoning) in terms of combat: "grapple with a new idea," "get this problem beaten," "this theorem really threw me." Part of our metaphorical understanding of cognition seems to be that knowledge is not always tractable to our mental grasping and manipulation. We may then try to *overcome* it and subject it to these mental manipulation processes. However, I do

not find much etymological evidence (so far) for the lively interference of this metaphor in semantic change.

14 There is a perhaps independent, but coherent, metaphor wherein words or utterances are seen as projectiles or weapons. Thus a last word in an argument may be a "parting shot." *Mud-slinging* and *take a (verbal) pot-shot at* seem coherent with both "argument is war" and this more specific instance of the Conduit Metaphor schema. *Sharp-tongued* and *cutting remark* may possibly also fit in with the idea of words as weapons, if not projectiles.

15 *Admit* falls right into the intersection between the metaphorical models for speech acts and mental states: it involves transfer of an object from one space into another (the two spaces in question could be either mental or speech-act personal spaces). So it is scarcely surprising to see it with lively uses in both domains, besides a still-extant use in the spatial domain.

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On the Linguistic Function of Event Roles

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1. Thematic relations have a status independent of language, based in the human cognitive capacity for individuating acts or states. They form an integral part of the definition of particular acts and states, and as such are assigned to mental representations of objects and concepts. This is the "defining function" of the thematic roles; it crucially involves the content and definition of particular roles. Thematic relations also function in a linguistic capacity where both their specific semantic content and the domain in which they are represented are significant in the explanation of language-dependent phenomena. This is what is meant by the "linguistic function" of the roles.

In their defining capacity, thematic relations have (minimally) a dual status. They are related both to perceptual structure and to the structure of events.[1] The human cognitive capacity of distinguishing objects, and of perceiving their physical properties and their motion in space, must be accounted for by a theory of perception. The capacity to identify objects as involved in certain individuatable acts requires a cognitive theory distinct from that involved with the perceivable properties of objects and their motion. This requires a cognitive theory of events.

Both the theory of perceptions and the theory of events are relevant to the defining function of thematic relations. Perceptual theory, categorizing objects as physical entities in terms of their perceivable properties, is concerned with (among other things) the movement of objects in space, and this theory gives rise to the set of roles discussed by Gruber (1965). For instance, Theme is defined as the object that changes position or state. Location, Source, and Goal are defined with respect to the movement or position of the Theme object. The theory of events, on the other hand, is concerned with objects and their status as actors in some identifiable action. Whether an actor is an Agent or a non-volitional Instrument cannot be determined solely on the basis of perceived movement through space. Only a theory of human action can capture facts about volitional acts. The theory of events gives rise to roles such as Agent, Patient, Instrument, and Bene-

factee.[2]

In this paper I will focus on the linguistic function of the event roles. I take it to be amply documented that the recognition of perceptual roles in linguistic theory leads to significant generalizations, for instance about the distribution of prepositions and adverbials and the decompositional semantics of lexical items (see, in particular, Gruber 1967; Fillmore 1968; Jackendoff 1972, 1983, 1987; Talmy 1975, 1983, 1985; and Rappaport and Levin 1987). I also take it to be well established that the local domain within which thematic roles are assigned must be recognized in determining the scope of certain grammatical phenomena, hence discussion of the Theta Criterion and theta role assignment in Government Binding Theory, and the importance of the thematic level of R-structure in the Locality Theory of Culicover and Wilkins (1984, 1986, and Wilkins 1987a,b).[3] Here I will show that the content of the event roles must be recognized in the explanation of certain linguistic phenomena. The success of the proposed account will be taken as evidence both that the semantic content of the roles is relevant to linguistics and that the distinction between the two sets of roles is well-motivated.

Before turning to the constructions to be discussed here, there is one clarification I must make. I am assuming that there is a level of thematic structure in which roles are associated with representations of individuals. At this level, in the unmarked case, the representation of each individual is associated with at most one role from each set of roles in the domain of a given role assigner. For the purposes of the analysis, it is irrelevant whether thematic structure exists as an autonomous level, or whether it forms part of some broader aspect of semantic interpretation, say, Logical Form. It is also irrelevant to the issues at hand whether it is formed by its own independent rules of combination or by a mapping from some other level, such as, for example, lexical or syntactic structure. Finally, thematic structure might be derivable from either conceptual structure (see Jackendoff 1983, 1987) or from verb entailments (Ladusaw and Dowty, 1987). The important point is that, in a derivation, there will be a representation of the assignment of roles to individuals within the domain of each role-assigning entity; and the rules of grammar will be able to refer to this representation.

2. Let us turn now to rules, whether lexical or

syntactic, that have to do with the assignment of thematic roles to particular grammatical relations. We will be most interested in constructions in which there is some apparent variation in the argument structure of certain verbs. Following Bresnan (1982), let us refer to this as polyadicity. Middles and ergatives, in the sense of Keyser and Roeper (1984), are good examples of this phenomenon.

(1) a. The sailors sank the boat.
b. Middle: Boats sink (easily).
c. Ergative: The boat sank.

As (1a) shows, the verb sink is transitive, dyadic, in that it can occur with both a subject and direct object. In this case the subject the sailors is the volitional actor, initiator of the event of sinking, and would be assigned the role Agent in thematic structure. The boat, the object in this case, is Theme because it is what undergoes the movement designated by the verb. It also bears the event role Patient. Patients are objects that undergo a change of state (see discussion of the feature [+affected] in Lebeaux 1987) in events caused by an Instrumental something or an Agentive someone. As Jackendoff (1987) suggests, a test for Patient is the ability of an NP to appear in the frame (2).

(2) {What happened / What Y did} to NP was ...

The fact that the boat is Patient in (1a) is corroborated by the grammaticality of (3).

(3) a. What happened to the boat is that it sank.
b. What the sailors did to the boat was sink it.

In the middle and ergative sentences of (1) sink occurs as a monadic predicate. It is well-formed in a structure with only a single argument. In these cases, the subject, rather than being an Agent as in (1a), is a Patient:

(4) a. What happens to boats is that they sink. (cf. (1b))
b. What happened to the boat is that it sank. (cf. (1c))

Keyser and Roeper informally utilize the term Agent

in referring to the role of the missing argument in these constructions. In fact an additional semantic role relevant in characterizing grammatical middles and ergatives is the one borne by the object in the associated transitive form. Considering first the ergatives, we see that the NP in surface subject position must be assigned Patient in thematic structure. Compare the examples in (5) with those in (6).

(5) a. The door closed.
b. The ice melted.
c. The bone fractured.
(6) a. *The room entered.
b. *The books received.
c. *Greek translates.
d. *The book reads.

The ungrammaticality of all the cases of (6) is due, at least in part, to the fact that the subjects are not Patients:[4]

(7) a. *What happened to the room is that John entered it.
b. *What happened to the books is that John received them.
c. *What happened to (the) Greek is that John translated it.

That the constraint on ergatives should mention Patient, rather than just unexpressed Agent, is supported by ungrammatical cases like (6a,c) where the related transitive would have an Agent subject, as in John entered the room or The interpretors translate Greek. This is also supported by Keyser and Roeper's -ize verbs that lack ergative forms even though they have Agent subjects in their transitive forms.

(8) a. *The expenditure authorized.
b. *That young man demoralizes.
c. *An appropriate answer visualized.

To the extent that Patient is useful in characterizing possible ergative verbs, I take the role to be a useful construct in linguistic theory.

Turning now to middles, there is more evidence for the importance of an event role in grammar. Compare (9) and (10).

(9) a. Bureaucrats bribe easily.

b. This floor waxes easily.
c. Greek translates easily.
d. This book reads easily.

(10)a. *Books receive easily.
b. *Rooms enter easily.
c. *French acquires easily.

The subjects in (9) are Affected objects, whereas those in (10) are not. I suggest that Affected belongs in the set of event roles and is distinct from Patient. Hence, there are contrasts such as (6c,d) vs. (9c,d). Middles require an Affected subject; ergatives require a Patient. This also accounts for (11) as compared with (8b).

(11) That young man demoralizes easily.

The object of demoralize is Affected, but not Patient; the middle is grammatical but the ergative is not. This also explains (12).[5]

(12)a. *That expenditure authorizes easily.
b. *An appropriate answer visualizes easily.
c. *The multiplication tables learn easily.

These examples are ungrammatical because the surface subject could not be Affected in the domain of the verb. In a sentence like The children learned the multiplication tables, the assumption is that the multiplication tables are not affected by the learning. All Patients are Affected objects, but not all Affected objects are Patients.[6] This would explain, partially, why Ergative Formation is more restricted than Middle Formation.

A final point to be made here about middles is that any account of their distribution simply in terms of some lexical property, such as whether or not the verb, or some verbal morphology, absorbs or assigns objective case, will necessarily be incomplete. The distinction between (13b) and (13d) depends on what thematic role may be assigned to the underlying object, as in (13a) and (13c), not just on whether the verb absorb can casemark an object.

(13)a. Marble absorbs oil easily.
b. Oil absorbs easily (into the marble).
c. Good students absorb information easily.
d. *Information absorbs easily (into the students).[7]

This means that middle formation is not, as Keyser and Roeper claim, "fully analogous" to passive formation. Middles are thematically more restricted:[8]

(14)a. Oil is absorbed easily by marble.
b. Information is absorbed easily by good students.
c. The books were received by the reviewers. (cf. (10a))
d. The room was entered by a mob of reporters. (cf. (10b))
e. French was acquired by educated Russians. (cf. (10c))

While Passive might be restricted by certain thematic conditions (see Jackendoff 1972, Lebeaux 1987), they are certainly not the same conditions that are relevant for middles.

3. Next we consider the rule of Resultative Formation Carrier-Duncan and Randall 1986). This rule is illustrated in (15).

(15)a. The rooster crowed the children awake.
b. The king laughed himself silly.

Predications in structures with transitive verbs often involve results:

(16)a. We painted the barn red.
b. We smashed the pitcher to pieces.

A result reading for a predication generally requires Agent-Patient or Instrument-Patient thematic structure. This is illustrated by (17a). But we will concentrate here on resultatives that affect the adicity of the involved verb, i.e. those that add an object onto an otherwise intransitive main predicate, such as (15) and (17b). Both examples in (17) show that the subject must be an Agent or Instrument[9]:

(17)a. *The editor received the manuscript torn.
(* = resultative)
b. *John slipped himself bruised.

Example (17a) is ungrammatical because the subject is a Goal and is neither Instrument nor Agent; (17b) is out because the subject is a non-Agentive Theme. Notice

that Theme is perfectly grammatical as the subject as long as it is Agent or Instrument as well:

(18)a. John ran himself ragged.
b. The dull knife hacked the sandwich to crumbs.

There are also event-role constraints on the newly-created object. Consider (19) and (20).

(19)a. *Van Winkle slept himself refreshed.
b. *The speaker continued {us/himself} bored.
c. *The neighbors {stayed/remained} themselves unwelcome.
(20)a. *The hero exited the stage empty.
b. *Father departed the children destitute.
c. *Mary left herself lonely.
(* = resultative)

All the ungrammatical examples in (19) have stative main verbs. The relevance of this to the issue at hand is that verbs that simply describe the state of their subject cannot be interpreted as affecting some object in any way. In all the acceptable resultatives the object is interpreted as Affected by the verb.[10]

Support for this claim is derived from the fact that resultatives with intransitive bases can undergo Middle Formation:

(21)a. Children crow awake easily (out on the farm).
b. Horses run ragged easily (on the beach).
c. Women's feet walk to pieces easily (in high heels).

The ungrammatical cases in (20) have verbs whose subjects are Themes (and Agents) involved in a movement away from somewhere (or something). The objects in these cases could only be interpreted as Source, and would not be Affected. Unaffected Goals are also excluded from object position in a resultative:

(22)a. *Rambo arrived the scene violent.
b. *The crowd entered the room full.
c. *The teacher approached the children nervous. (* = resultative)
d. *Harrison crashed the party noisy.

In light of the data thus far presented, I would

argue that the set of verbs that can undergo Resultative Formation is not randomly constituted. There is a thematic restriction on both the subject and the newly-created object.[11] The subject must be an Agent or Instrument, and the object must be Affected.[12]

4. We move next to a brief consideration of the Tough construction. I include these sentences in the discussion of polyadicity because the non-it subject of the tough-class predicate actually plays a role in the embedded domain (binds an e in that domain) while it occurs as the subject of the semantically monadic predicate of the matrix clause. Compare (23) and (24).[13]

(23)a. Ben is tough to see [e].
b. Robert is pretty to look at [e].
c. Mary is ready to visit [e].
d. Mary is too stubborn to visit [e].
e. His brother was pleasant to leave [e].

(24)a. *The man was hard for Mary to find [e] sick.
b. *The money was tough for John to lack [e].
c. *The boss was nice for Bill for Sam to talk to [e].

Culicover and Wilkins (1984:115), following Nanni (1978), characterize well-formed tough-sentences as follows:

(25) 1. The set of individuals referred to by the subject of the tough-class predicate must be assigned thematic roles by the verb of the complement clause (and thus must bind [e] in the complement).
2. The subject of the complement must be an Agent.
3. The Benefactee of the matrix clause must be identical to the Agent in the complement.

Examples (24a) and (24b) are bad because the complement subject is not an Agent. In (24c) the matrix Benefactee is not the Agent in the complement. A characterization of those predicates that are involved in the tough-construction requires the utilization of the event-theory thematic roles Agent and Benefactee.

In the time remaining, I briefly mention three additional adicity-changing grammatical processes that

involve event roles. These are exemplified in (26)-(28).

(26)a. The girls ran.
b. The girls outran the boys.
c. The girls left.
d. *The girls outleft the boys.
(27)a. John escaped from prison with dynamite. (= John used dynamite to escape from prison) (Bresnan 1982:165)
b. John killed Bill with a knife. (= John knifed Bill)
(28)a. The night clerk {lost/found} him the receipt book.
b. My son (went and) bought a motorcycle on me.

In each of the constructions exemplified here, an extra argument occurs with the verb. Out-prefixation requires an object that can be interpreted as Affected by the verb (notice that the same intransitives that permit resultatives permit out-prefixation). Instrumentalization (Bresnan 1982) as in (27) adds an Instrument argument to the verb's thematic domain.[14] The examples in (28) have an extra Benefactee.[15]

These three sets of examples are relevant to the main point here because in each case a thematic role from the event-related class is involved.

5. In this paper I have discussed how the semantic content of particular thematic roles affects grammatical operations. Thematic relations do therefore have a linguistic function.

I also distinguished between the perceptual roles and the event roles. Perceptual roles have played no part in the generalizations mentioned here.

I suggest that there is an important reason for this. It might well be that the perceptual roles, and the way they are paired with grammatical relations, serve to define particular verbs. If this were the case, then a rule which reassigned some perceptual role would have the effect of changing the basic verb meaning. While it is commonplace for linguists to talk about rules such as Causativization, that involve volitional Actors, or rules that "delete an Agent", I am unaware of a rule that, for example, adds a Theme or deletes a Source. To the extent that such rules are imaginable, they would seem to completely change the meaning of any verb that they would apply to.

Particular verbs, defined in part by the grammatical expression of their perceptual roles, can be appropriate in different types of events. Grammatical rules therefore can alter the expression of the event roles without completely distorting the underlying verb meaning.

Footnotes

1. The separation of thematic relations into (at least) two sets and the distinction between their defining and linguistic functions form basic premises of my joint work with Peter Culicover. Both assumptions have played an important role in our linguistic theory (e.g. Culicover and Wilkins 1986) and in our work on learnability (Culicover and Wilkins 1984, Chapter 5).

2. Perhaps Experiencer and Percept also belong in the set of event-theory roles. Jackendoff (1987) suggests that they belong on the "actional tier." However, it seems that they might co-occur with roles from both of the other sets, such as Location and Agent, and therefore might form a class of their own.

3. The equivalent of thematic structure would seem to be necessary in Lexical Functional Grammar as well, but I mention this parenthetically because of my own lack of familiarity with the theory.

4. That the subject be a Patient is not a sufficient condition on well-formed ergatives, it is merely a necessary one:

i. *The chicken killed.
ii. *The tree hit.
iii. *The soup ate.

5. Referring to examples such as those in (12), Keyser and Roeper say "We have no idea why these sentences are excluded. They refer to abstract mental activity, but we have been unable to capitalize on this property in any meaningful fashion." I suggest that it is not just "mental activity" that is relevant, but whether or not the transitive object is affected by the action denoted by the verb.

6. I realize that the distinction between Affected and Patient is not entirely clear. While difficult to distinguish the two by definition, it seems relatively straightforward to distinguish them by example and by the test for Patient. For instance, in i. Bill is Affected, whereas in ii. he is not.

i. John gave Bill the book.
ii. John gave the book to Bill.

In i. Bill is affected by the giving in that he has the

book. In ii. it might be the case that Bill did not in fact receive the book, and therefore was not affected by the giving. In neither case would Bill be a Patient, however:

iii. *What happened to Bill is that John gave him the book.

In a sentence like John read the book, the book is Affected. It is not a Patient, is not altered by some Agent or Instrument, and iv. is not good.

iv. *What happened to the book is that John read it.
(Compare: What happened to the book is that John burned it.)

7. Thanks to Ellen Kaisse (personal communication) for pointing out this example.

8. Keyser and Roeper claim that middle formation is "fully analogous" to passive formation and that "the mechanisms needed for middle formation follow straightforwardly from the existing grammar." In light of examples like (13) and (14) this statement would have to be reevaluated.

9. I am assuming, along with Carrier-Duncan and Randall, that the subject in middles is an object at the point Resultative Formation applies. Hence Aluminum cans squash flat easily is actually NP squash the aluminum cans flat easily where the NP would have to have an Agentive or Instrumental reading.

10. Carrier-Duncan and Randall state that the added object is assigned no thematic role by the matrix verb, that the resultative inherits the thematic structure of the base from which it is formed. It is true that the object is assigned no role from the perceptual set, but is must be interpretable as Affected.

11. There is another curious fact about the thematic structure of resultatives. Often with transitive bases the object cannot be one that would be assigned the canonical role. Notice:

i. a. John sang the children to sleep.
b. John sang himself hoarse.
c. *John sang the song long.

ii. a. The mouse nibbled the cupboard bare.
b. *The mouse nibbled the food gone.

iii. a. The customers bought the shelf empty.
b. *The man bought the books sold-out.

12. It might well be said that my observations about resultatives follow simply from what is entailed by a "result." This would be precisely right. Grammatical operations respect constraints imposed by

certain semantic roles, and these roles have a place in linguistic theory. This does not mean, however, that semantic criteria should invade the domain of syntactic operations. A syntactic rule of, say, Middle Formation could not be stated in terms of semantic primitives. The rules of semantic interpretation, however, would have to obey certain thematic conditions.

13. Examples (24a,b) are from Nanni (1978).

14. Bresnan demonstrates that these particular Instrument phrases are not simply optional prepositional adjuncts. For instance, they are disallowed where the verb already assigns an instrument role: An explosion killed Harry with dynamite is semantically anomalous.

15. Notice that a Benefactee is not necessarily "benefitted positively" by the action of the verb. A Benefactee is something more like an "interested party." In traditional grammars of Spanish this extra argument is sometimes called the "dative of interest;" in German it is called the "free dative."

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